

(DRAFT)

**THE COMPLETE
FITNESS**



HANDBOOK

26 March 2002

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INTRODUCTION

This handbook provides the basics of fitness. It provides easy to follow fitness instructions and example programs that can be tailored to any individual regardless of their present fitness level. This book targets the Army ROTC cadet, but it applies equally well to soldiers in uniform or civilians who wish to improve their fitness level.

The road to improving fitness begins with reassessing ones view of fitness. Our society does not emphasize fitness. Companies pay marketing experts hundreds of millions of dollars every year to convince consumers to buy food and other products that do not contribute to healthy bodies or improved fitness levels. Restaurants offer "supersize" portions and encourage you to overeat. Most people do not understand nutrition or that there is a correlation between nutrition and fitness. Our culture emphasizes the fad diet, pill, or electronic stimulation to stay in shape because it is easier than adopting a good health and fitness program for life.

It takes work to maintain a healthy lifestyle and fitness level. It does not require a person to starve himself or exercise religiously but it does require self-discipline and work. For most people it requires a change in their lifestyle. They must learn to think differently about health, nutrition and exercise. It means acknowledging **that health and fitness are personal responsibilities**. For some this will become a huge change. Unit physical training (PT) while important cannot take the place of individual responsibility for fitness. Fitness requires commitment and planning. It takes work on weekends as well as weekdays and does not stop even during vacation and holiday seasons.

Before jumping into a new fitness program please read to understand some basic concepts of physical fitness.

Physical Fitness

PRINCIPLES

Before explaining what a physical fitness program should look like, there are some basic terminology which must be discussed. These principals apply to all programs in general and must be addressed in the development of any fitness program.

INTENSITY – The amount of effort put into each workout, usually measured by heart beats per minute. For the maximum benefit in each workout, plan on exercising at a minimum of 70 percent of the maximum heart rate. There are several scientific ways to measure your maximum heart rate. However, a good rule of thumb for maximum heart rate is start with 220 and subtracting your age. ($220 - \text{age} = \text{maximum heart rate}$).

DURATION – The length each exercise period should last. There has been a great deal of research on this topic. Most experts believe that when working on your cardiovascular endurance a minimum of 20 to 30 minutes is needed to obtain maximum benefit. This holds true for the majority of the population. The only notable exception occurs for long distance or endurance athletes (e.g. marathon runners or tri-athletes).

FREQUENCY – The number of workouts one should have per week. Once again experts agree that the average person requires a minimum of three work outs per week to improve the current level of fitness. Working out less frequently will only maintain a level of fitness; it will not improve the level of fitness. When exercising only three times a week, each periods should consist of a high intensity. Exercising with consistent frequency can also be referred to as **REGULARITY**. Exercise must be done regularly to produce a training effect. Sporadic exercise may cause more harm in the form of injury than benefit form exercise.

HARD EASY CONCEPT – **Do not work the same muscle groups hard day after day.** Muscles need recovery time. People frequently misunderstand this point of recovery. It explains why most people see little or no gain from excessive exercise. You can work the same muscle groups each day, however, you should work hard one day and easy the next. This is a critical point because our new fitness program will focuses on working out six days a week.

GENERAL ADAPTATION PRINCIPAL (GAP) – Muscles as well as your cardiovascular system in the body will adapt to the increasing stress placed upon it through exercise. Everyone has heard of the phrase “No Pain, No Gain”. To see gains in a fitness program one must to stress the existing muscular and cardiovascular systems. This can also be called the **OVERLOAD** principal. For a muscle to increase in strength, the workload during exercise must be larger than what it normally experiences.

SPECIFICITY – There are several different exercises and events that can develop your muscular strength as well as cardiovascular fitness. To increase the number of push-ups you can do, simply increase upper body strength through a number of strength exercises and weights. However, the best way to improve push-ups requires doing push-ups. Similarly one can improve cardiovascular fitness by biking swimming, or walking. However, if the goal remains an improved ability to run, the best exercise will be running.

MAJOR COMPONENTS OF PHYSICAL FITNESS – There are several components of any fitness program. The three major components of most programs are *flexibility, strength and cardiovascular endurance*. These components are the essential elements of the Army Physical Fitness Program. We will discuss these in depth in future chapters.

Fitness Assessment

Before starting any new fitness program it is important to assess ones abilities to plan a fitness program. This includes knowing strengths as well as weaknesses. Ideally, a fitness program would improve weak areas and maintain or improve strength areas. However, before explaining the form of a diagnostic test there are other important factors and preferences that should be identified. These factors and preferences may include the time of day to workout, how much time is available each day to workout, individual or team sports, and finally the goal of the fitness program.

The questionnaire attached (FORM 1-1) is intended to give a fitness trainer the basics they need to personalize a fitness program that will works.

Diagnostic Test

The purpose of the diagnostic test is to assess a cadet's level of flexibility, strength and cardiovascular endurance. This diagnostic test is composed of 6 events. The six events are as follows and will be performed in order. A brief warm-up period will precede the administration of the test. The warm-up consists of a Cadets jogging in place for 3 minutes, starting slowly and increasing intensity to warm the body's muscles and ligaments. Light stretching will follow the warm-up.

1. First event: Bench Press. Cadets will perform a 1-rep maximum of this exercise to determine chest, shoulders, and triceps strength. A cadet should begin with a weight which they are confident they can press. Allow at least 1 minute rest between attempts. The weight will be increased at the cadet's request and he will perform the exercise again. Allow no more than 5 attempts to reach the 1-rep maximum. Any failed attempt terminates the exercise. The last correct repetition will count as the 1-rep maximum.



Figure 1

(1) **Equipment.** Flat weight bench. At least 1, preferably 2 spotters. Lifting gloves are authorized. Bench press shirts are not authorized. (2) **Performance.** Lie in a supine position on a flat bench with your legs positioned at the sides of the bench and your feet flat on the floor. Using a handgrip that is about 6 inches wider than your shoulder width, bring the barbell to arms length above the chest but in line with the shoulders (see fig 1). If two spotters are available they will position themselves on each side of the bar. The spotters may assist in the liftoff. If only one spotter is available, he/she will be at the lifter's head to assist. Once the bar is at the start position the spotter will release the bar. Lower the barbell to the chest and make a definite pause. As soon as momentum has ceased the grader will yell press. Press the barbell to the start position to complete the repetition. The spotter will not touch the barbell during the repetition unless absolutely necessary. If the spotter has to assist the lifter during the repetition the event is terminated.

Upper Body Strength = 1 rep max in pounds divided by body weight in pounds

	<u>Males</u>		<u>Females</u>
5	greater than 1.26	5	greater than .78
4	1.17 - 1.25	4	.72 - .77
3	.97 - 1.16	3	.59 - .71
2	.88 - .96	2	.53 - .58
1	less than .87	1	less than .52

2. Second Event: Push-up. Cadets will perform as many push-ups as they can to determine the muscular endurance of the chest shoulder, and triceps muscles.

(1) **Equipment.** Flat area.

(2) **Performance.** On the command 'get set,' assume the front-leaning rest position by placing your hands where they are comfortable for you. Your feet may be together or up to 12 inches apart. When viewed from the side, your body should form a generally straight line from your shoulders to your ankles. On the command 'go,' begin the push-up by bending your elbows and lowering your entire body as a single unit until your upper arms are at least parallel to the ground. Then, return to the starting position by raising your entire body until your arms are fully extended. Your body must remain rigid in a generally straight line and move as a unit while performing each repetition. At the end of each repetition, the scorer will state the number of repetitions you have completed correctly. If you fail to keep your body generally straight, to lower your whole body until your upper arms are at least parallel to the ground, or to extend your arms completely, that repetition will not count, and the scorer will repeat the number of the last correctly performed repetition. An altered, front-leaning rest position is the only authorized rest position. That is, you may sag in the middle or flex your back. When flexing your back, you may bend your knees, but not to such an extent that you are supporting most of your body weight with your legs. If this occurs, your performance will be terminated. You must return to, and pause in, the correct starting position before continuing. If you rest on the ground or raise either hand or foot from the ground, your performance will be terminated. You may reposition your hands and/or feet during the event as long as they remain in contact with the ground at all times. Correct performance is important. You will do as many push-ups as you can; there is no time limit.

3. Third Event: Curl-up. Cadets will perform the curl-up exercise to assess abdominal strength and endurance.

(1) **Equipment.** Mat, Ruler, Metronome

(2) **Performance.** Start with your back on the floor with your knees bent at a 90 degree angle (feet 12 to 18 inches away from the buttocks). Place your arms by your sides with palms down on the floor, elbows locked, and fingers straight. The grader will place a ruler or draw a line 12 cm away from the longest finger tip and set metronome to a cadence of 50 beats per minute. Curl your head and upper back upward, keeping arms stiff, reaching forward along the floor to touch the line. Your fingers, feet and buttocks must stay on the floor during the entire curl-up. Slide the palms of the hands (extended arms) along the mat until the fingertips of both hands just touch the 12 cm line. Keep the arms straight. Lower your body until the back is flat against the ground. Perform the movement following the cadence of the metronome (25 curl-ups per minute). Take the same amount of time to perform the raising and lowering phases. The test score is the number of complete touches on the line until the rhythm cannot be followed. If you do not have a Metronome, conduct standard bent knee sit-ups with your hands crossed over your chest. Do as many as you can in a 2 minute period.

Male			
AGE	15-19	20-29	30-39
Excellent	>74	>74	>74
Above Average	35 - 74	31 - 74	36 - 74
Average	24 - 34	24 - 30	26 - 35
Below Average	8 - 23	4 - 23	0 - 23

Female			
AGE	15-19	20-29	30-39
Excellent	>74	>69	>54
Above Average	30 - 74	30 - 69	28 - 54
Average	24 - 29	21 - 29	15 - 27
Below Average	10 - 23	5 - 20	0 - 14

Fourth Event: Step Test. Cadets will perform the 3-minute step test to determine cardiovascular endurance.

(1) **Equipment.** Metronome, 12 inch step.

(2) **Performance.** Cadets will step up (1-2) and down (3-4) in cadence with the metronome which is set at 96 beats per minute (4 clicks = one step cycle) for a stepping rate of 24 steps per minute. Cadets will step up and down on the 12-inch bench for 3 minutes. Immediately after the 3-minute stepping exercise, the cadet is to sit down and within 5 seconds, the tester is to take the subject's heart rate for one minute. The total one-minute post-exercise heart rate is the subject's score for the test. Compare to YMCA Norms below. In the event you do not have a Metronome, the tester will count one step-two step-three step-four step in an attempt to come close to 96 beats per minute. Needless to say, this will result in a less accurate evaluation. **Example:** A 18-year old female performs the step test with a final heart rate of 95. Looking at the table she falls under the above average profile.

Physical Fitness Evaluation on Profile for 3-Minute Step Test (Heart Rate values in beats per minute)

MALE			
AGE	18-25	26-35	36-45
<u>Classification</u>			
Excellent	70-78	73-79	72-81
Good	79-88	80-88	82-94
Above Average	89-97	89-97	95-102
Average	98-104	98-106	103-111
Below Average	105-114	109-116	112-118
Poor	115-128	117-126	119-128
Very Poor	129-164	127-164	129-168
FEMALE			
AGE	18-25	26-35	36-45
<u>Classification</u>			
Excellent	70-78	73-79	72-81
Good	79-88	80-88	82-94
Above Average	89-97	89-97	95-102
Average	98-104	98-106	103-111
Below Average	105-114	109-116	112-118
Poor	115-128	117-126	119-128
Very Poor	129-164	127-164	129-168

5. Fifth Event: Sit & Reach. Cadets will perform the sit and reach to determine hamstring and lower back flexibility.

(1) **Equipment.** Ruler.

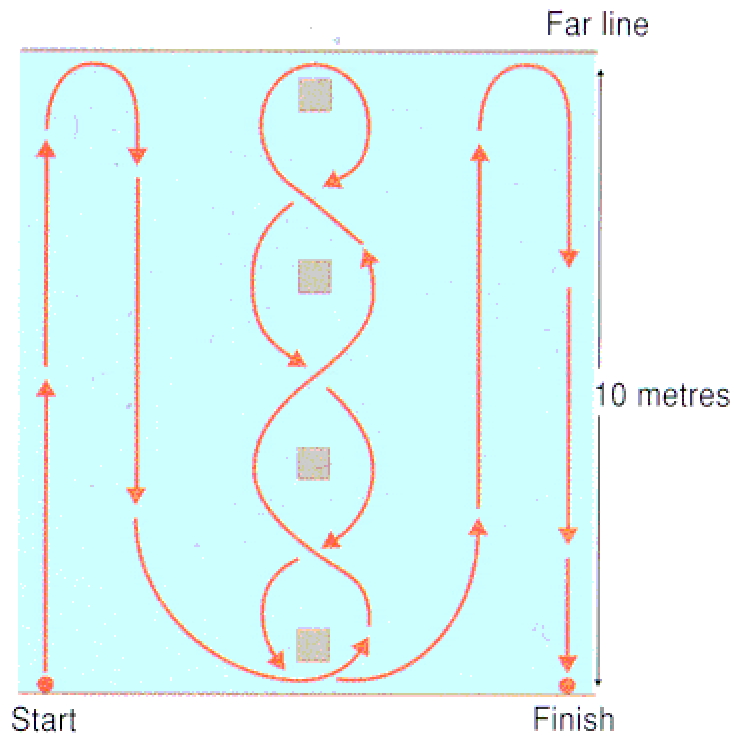
(2) **Performance.** Sit on the floor with legs out straight ahead and shoes off. The tester holds both knees flat against the floor. Lean forward slowly as far as possible and hold the greatest stretch for two seconds. Make sure there is no jerky movements, and that the fingertips remain level and the legs flat. The score is recorded as the distance before (negative) or beyond (positive) the toes. Repeat twice and record the best score. The table below (figure 3) gives you a guide for expected scores (in cm) for adults

	Men	women
Super	> +27	> +30
Excellent	+17 to +27	+21 to +30
Good	+6 to +16	+11 to +20
Average	0 to +5	+1 to +10
Fair	-8 to -1	-7 to 0
Poor	-19 to -9	-14 to -8
Very poor	< -20	< -15

6. Sixth Event: Illinois Agility Run Test. Cadets will perform the Illinois Agility Run Test to test agility.

(1) **Equipment.** flat surface (a 400m Track), 8 cones, a stop watch.

(2) **Course.** The length of the course is 10 meters and the width (distance between the start and finish points) is 5 meters. On the track you could use 5 lanes. 4 cones can be used to mark the start, finish and the two turning points. Each cone in the center is spaced 3.3 meters apart.



Gender	Excellent	Above Average	Average	Below Average	Poor
Male	<15.2 secs	15.2 - 16.1 secs	16.2 - 18.1 secs	18.2 - 18.3 secs	>18.3 secs
Female	<17.0 secs	17.0 - 17.9 secs	18.0 - 21.7 secs	21.8 - 23.0 secs	>23.0 secs

Administration. Professors of Military Science & Leadership (PMS)s should administer the diagnostic test in the assessment phase of the fitness program development. Use the Diagnostic Test Score Card provided. The next diagnostic test should occur no later than week six. Subsequent diagnostic tests should be given every six weeks. After the initial diagnostic is acceptable to substitute the APFT as a diagnostic tool. PMSs or their designated fitness expert should regularly monitor the fitness logs of cadets and provide guidance as needed.

Diagnostic Test Score Card

Last Name	First Name	MI
Gender M or F	Age	VO2 Max
Height _____ inches	Weight _____ lbs	Body Fat _____ %
Bench Press	Lift 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 1-RM = _____ lbs	1 Rep Maximum Divided by Bodyweight =
Push-up	Repetitions _____	
Curl-up	Repetitions _____	
Step Test	1-minute post-exercise heart rate _____ beats	
Sit & Reach	Distance from toes (+ or -) _____ cm	
Phoenix Agility Run	Time _____	

Fitness Questionnaire

NAME _____ AGE _____ DATE _____

ACADEMIC SCHEDULE: Monday _____
(this Semester) Tuesday _____
Wednesday _____
Thursday _____
Friday _____
Saturday _____

EXERCISE HABITS/ PREFERENCES (Select One)

I _____ to exercise and _____ access to a gym
(like, sometimes like, never want) (have, do not have)

I like to workout _____
(alone, in a small group, in a large group)

I have _____ discipline to stick to a fitness program
(a little, some, a lot of)

I need _____ to stick to my fitness program
(no help, some help, a lot of help)

I _____ to lift weights
(like, have tried, have never tried)

I prefer to _____ for my cardiovascular endurance training
(run, walk, bike, swim, skate)

GOALS

I want to: A. Improve my overall personal fitness
 B. Just pass the APFT
 C. Just improve a particular weakness

STATE YOUR PERSONAL GOALS

SELF ASSESSMENT (Selcet: None, Beginner, Average, Above Average, Excellent)

Flexibility _____

Strength _____

Cardiovascular Endurance _____

List your weakness

List your strengths

Work Form 1-1

PROGRAM DESIGN

Where to Begin

It is recommended that **before you begin any physical fitness program you see your doctor and get a clean bill of health.** The Army and ROTC have made this a mandatory requirement. If you are not aware of physical problems, your physical fitness program could complicate a previous physical condition.

Next, there are a series of questions that you need to answer. These will assist the physical fitness expert in developing your program. Some of these questions include but are not limited to: What are your goals? What time of day do you workout? What facilities are available to you? What forms of exercise do you prefer? (swimming, biking running, walking). Have you ever lifted weights before? How do you assess your level of fitness? Have you seen your doctor or completed a physical exam recently? You can use work form 1-1 to assist you in developing your fitness program.

Before you can set a realistic goal for yourselves or establish where you want to be, you have to know where you are. This can best be accomplished by **conducting an individual assessment.** This assessment consists of several parts and is usually conducted by a physical fitness expert. On a University campus there are several physical fitness experts found at most fitness centers and gymnasiums. In the Army, we have Master Fitness experts that can conduct this assessment. The three major areas that a physical fitness expert will evaluate are the major components of physical fitness, flexibility, strength and cardiovascular endurance.

Flexibility is a very important element of your physical fitness program. If used properly and improved upon, it can prevent soreness and injury. A physical fitness expert may have you conduct different stretches designed to measure your flexibility. These stretches may be identified based on your goals and preferences.

Strength is a major component of any physical fitness program. A physical fitness expert could measure your current strength several ways based on your preferences and the equipment available. They may have you lift free weights or work different Nautilus machines. They would make sure that they evaluate your major muscle groups, both upper and lower body. If there is a specific area or task you are trying to improve they may evaluate your ability in this area. For example, in the Army, the push-up and sit-up are indicators of your upper body and abdominal strength.

Cardiovascular endurance can be measured a number of different ways. Based on your goals and preferences it can be done by walking, running, biking or swimming to name the more common methods. In most cases, the form of assessment will mirror what your goal is. If your intent is to improve your running, the physical fitness expert will measure how long or how fast you can cover a specified distance in a controlled environment. Often this is done on a treadmill where the physical fitness expert can monitor your level of stress and slow or stop the treadmill immediately if needed.

Now that you have completed your assessment, you need to **establish your goals.** If you are a ROTC cadet or in the Army, your minimum goal might be to pass your Army Physical Fitness Test (APFT). I would advise you not to settle for the minimum. This is your chance to change your lifestyle. You have to exercise anyway, make the most of it! Setting goals is very important. Once you have established and written down your goals have your fitness expert help you determine how long it will take you to reach these goals. Setting realistic expectations helps you from getting discouraged early on. Take your goals and post them somewhere that you can look at them daily.

You can use work form 1-1 to assist the assessment process. Once completed you need to layout your fitness program. Based on the information you filled out and your assessment in work form 1-1 you can put pen to paper in laying out your program. The time of day you work out, free weights or nautilus, running, walking, biking, swimming, what exercises you choose will be up to you based on your initial assessment and what YOUR goal is. I have outlined three programs that may help you get started. One is for beginner, one for intermediates and one for advanced programs. Feel free to use some or all of these programs. I would expect you to tailor them to your specific needs. These forms will not only assist you in developing your program but will help you track progress as well. Before we move on, let me discuss will power and discipline.

Beginning a new program causes you to change. We all know that change is difficult. When you begin an exercise program you may not see improvement for six to eight weeks. This often causes the beginner

to quit or give up. As a ROTC cadet, soldier or officer in the Army, exercising is part of your job. I want you to look at exercising as your personal responsibility. This is something that you want to do for yourself. I would recommend that you find a friend to exercise with. Somebody that is at the same ability level you are or that enjoys the same type cardiovascular activities you do would be ideal. In the Army, you may not always have a choice in whom your workout partners are but at least you are not alone. Knowing that somebody is depending on you helps on those days that you do not feel like exercising.

Flexibility

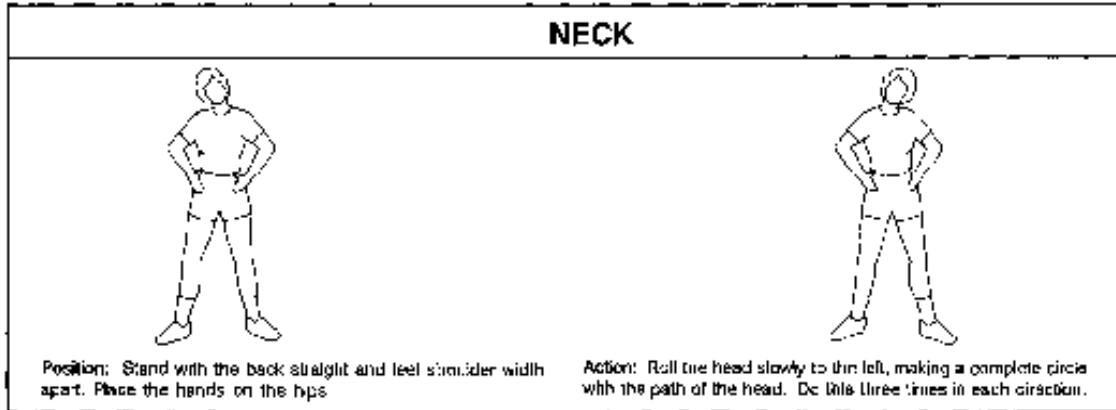
Flexibility is an important component of your fitness program. Many activity-related injuries have their root in lack of flexibility. Think of your muscles as rubber bands. When they are cold they are rigid and brittle. When warm they stretch and retract easily without injury. Conducting a good warm-up prior to exercising and a good cool-down upon completion will help prevent injury and reduce muscle soreness.

No matter what your current fitness level, you should always begin your exercise sessions with a warm-up. A good warm-up sequence is as follows. Jog in place or a specified location for one to two minutes. This causes a gradual increase in the heart rate, blood pressure, circulation, and increases the temperature of the active muscles. Next, perform slow joint rotation exercises (for example, arm circles, knee/ankle rotations) to gradually increase the joint's range of motion. Work each major joint for 5 to 10 seconds. Finally, stretch the muscles to be used during the upcoming activity slowly. This will "loosen up" muscles and tendons so they can achieve greater ranges of motion with less risk of injury. Hold each stretch position for 10 to 15 seconds, and do not bounce or bob.

Immediately following your exercise session stretch long and hard as part of your cool-down. After exercising, when your muscles are their warmest is the best time to improve your flexibility. Do not limit flexibility exercises to warm-up and cool-down only. Take the time to dedicate sessions to flexibility. Stretching throughout the day is also a great idea. Stretching is one form of exercise that takes very little time relative to the benefits gained. Some of the more common flexibility exercises are listed below.

Rotation Exercises - Rotation exercises are used to gently stretch the tendons, ligaments, and muscles associated with a joint and to stimulate lubrication of the joint with synovial fluid. This may provide better movement and less friction in the joint.

The following exercises should be performed slowly.



ARMS AND SHOULDERS



Position: Stand with the back straight and feet shoulder width apart. Extend the arms outward to shoulder height.

Action: Rotate the shoulders forward and make a large circular motion with the arms. Repeat the action in the opposite direction. Do this three times in each direction.

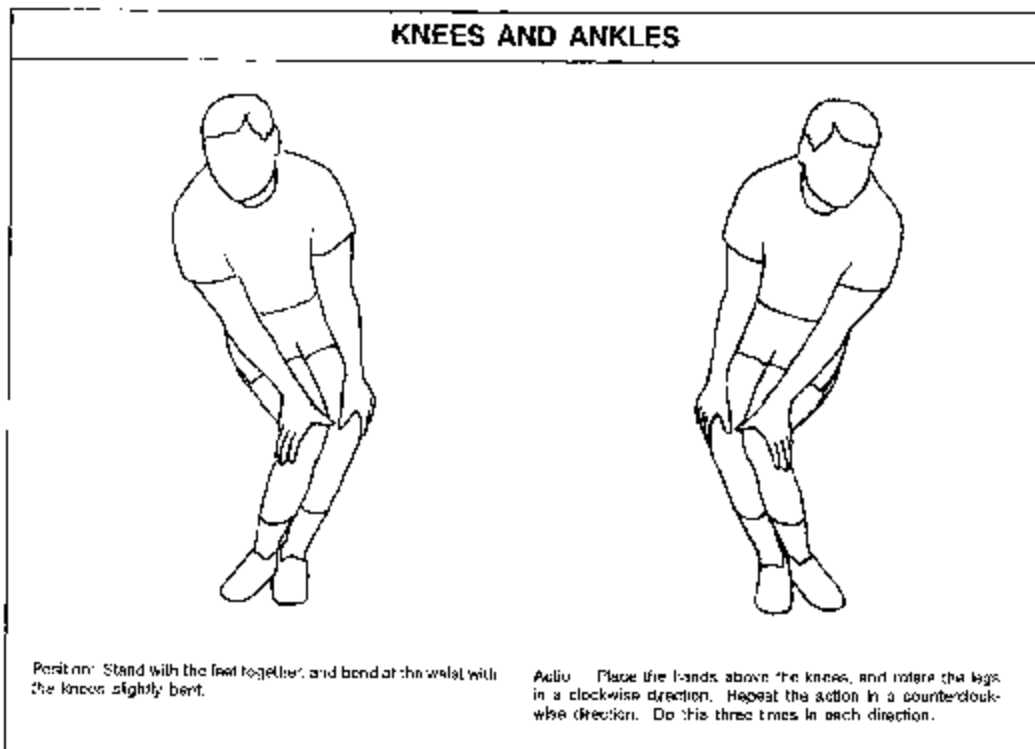
HIPS



Position: Stand in the same manner as for the neck rotation.



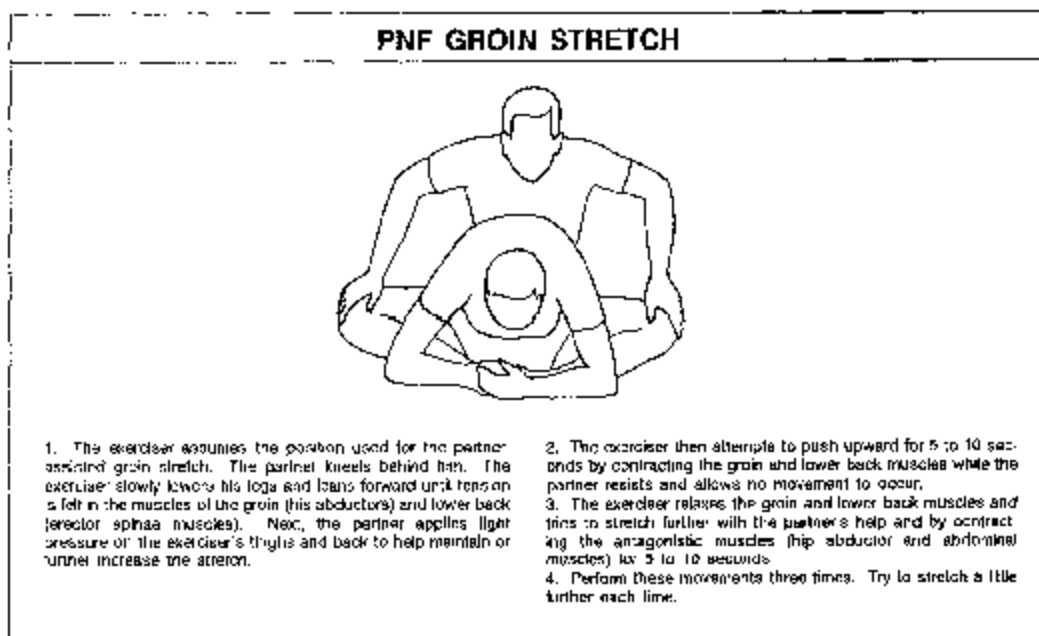
Action: Rotate the hips clockwise while keeping the back straight. Repeat the action in a counterclockwise direction. Do this three times in each direction.



Common Stretching Exercises

CAUTION: Some of these exercises may be difficult or too strenuous for unfit or medically limited soldiers. Common sense should be used in selecting stretching exercises.

Assume all stretching positions slowly until you feel tension or slight discomfort. Hold each position for at least 10 to 15 seconds during the warm-up and cool-down. Developmental stretching to improve flexibility requires holding each stretch for 30 seconds or longer.



Strength Training

There has been a great deal of information written about strength training. Yet the principals of strength training are relatively easy. Based on your Fitness assessment, you should know what your strengths and weaknesses are. The idea is to develop a strength training program that develops your weaknesses and maintains your strengths.

To do this, there are several techniques you can choose from. I'm sure that if you have ever gone to a Gym, you get all kinds of advice from friends and strangers alike. Most of this advice is probably good if you keep in context. The problem you face as a beginner is **to know what is best for you**. You can choose to use your body as resistance (push-ups, pull-ups, etc.), lift free weights or use resistance machines. Once you decide what medium you want to use, there are several exercises that work the same muscle groups. No one exercise is better than another when you are working the same muscle groups. The range of motion you get or personal preference will determine what you select. Many people like to change exercises periodically to keep variety in their program.

Beginners usually begin a strength program working to improve their muscular endurance much like a runner develops a base of miles before they advance to a more vigorous program. There is a difference between muscular endurance and strength training. Muscular endurance uses less weight and you do more repetitions where strength training uses more weight and you do less repetitions. Muscular endurance develops your endurance to do a particular exercise longer where strength training develops the maximum strength in your muscles.

To develop muscular endurance, choose a resistance that lets you do more than 12 repetitions of a given exercise. This would be your 12+ repetition maximum (12 + RM). With continued training, the greater the number of repetitions per set, the greater will be the improvement in muscular endurance and the smaller the gains in strength. For example, when you train with a 25-RM weight, gains in muscular endurance will be greater than when using a 15-RM weight, but the gain in strength will not be as great. You can optimize your performance by determining your RM from an analysis of the critical tasks you want to perform. Most people will benefit from a resistance-training program with an 8-12 RM.

To develop muscle strength, the weight selected should be heavier and the RM will also be different. For example, you should choose a weight for each exercise in which you can do 3 to 7 repetitions correctly. This weight is the 3-7 RM for that exercise. The greatest improvements seem to come from resistance of about 6-RM but the range remains 3-7 RM. The weight should be heavy enough so that an eighth repetition would be impossible because of muscle fatigue. The weight should also not be too heavy. If you cannot do at least three repetitions of an exercise, the resistance is too great and should be reduced. Beginners to a strength training program should not start with heavy weights. You should first build an adequate foundation by training with an 8-12 RM or a 12 + RM of muscular endurance.

Program Development

Now that we are ready to develop your strength program, I need to make sure that I cover some of the principals that were discussed in an earlier chapter and how they relate to strength training. Hopefully, this will help you see and understand why if they are followed you will have a successful training program.

Whichever RM range you select, always strive to over-load your muscles. The key to overloading a muscle is to make that muscle exercise harder than it normally does. An overload may be achieved several ways:

- Increasing the resistance
- Increasing the number of repetitions per set
- Increasing the number of sets
- Reducing the rest time between sets
- Increasing the speed of movement in the concentric phase. (Good form is more important than speed of movement)
- Using any combination of the above

When overload is applied to a muscle, it adapts by becoming stronger and/or by improving its endurance. Usually significant increases in strength can be made in three to four weeks of proper training depending on the individual. We discussed the principal of frequency in an earlier chapter. I need to mention the principal of PROGRESSION. If your workload is not progressively increased to keep pace with newly won strength, there will be no further gains. When you can correctly do the upper limit of repetitions for the set without reaching muscle failure, it is usually time to increase the resistance. Normally, this upper limit should be 12 RM.

For example, if your plan were to do 12 RM in the bench press, you would start with a weight that causes muscle failure at between 8 and 12 RM. You should continue with that weight until you can do 12 RM correctly. You then should increase the weight by about 5 percent but no more than 10 percent. In a multi-set routine, if your goal is to do three sets of eight RM of an exercise, start with a weight that causes muscle failure before you complete the eighth Repetition in one or more of the sets. Continue to work with that weight until you can complete all eight repetitions in each set, then increase the resistance by no more than 10 percent.

We discussed SPECIFICITY, which addresses specific muscle groups you want to develop. In addition to your weakness as a ROTC cadet you will be required to take the Army Physical Fitness Test (APFT). This test is designed to measure your upper-body strength, your abdominal strength and your cardiovascular endurance. Keep this in mind when you select the exercises to put in your program. Another principal to remember in any fitness program is REGULARITY. Remember that exercise must be done regularly to produce a training effect. Sporadic exercise may do more harm than good. The exercises that are recommended follow an A and B workout. They focus on different muscles and break the exercise periods into shorter workouts. Overall the HARD EASY concept applies.

This gets into how much recovery is needed between workouts. Consecutive days of hard resistance training for the same muscle group can be detrimental. The muscles must be allowed sufficient recovery time to adapt. Strength training can be done every day if you rotate the muscle groups so that the same muscle group is not exercised on consecutive days. There should be at least a 48-hour recovery period between workouts for the same muscle groups. For example, upper body muscles can be trained on Monday, Wednesday and Friday and lower body muscles on Tuesday, Thursday, and Saturday. If you have fewer days each week to exercise, Monday and Friday would be workout A and Wednesday would be workout B. This is the principal behind Workout A and Workout B.

Recovery is also important within a workout. The recovery time between different exercises and sets depends, in part, on the INTENSITY of the workout. Normally, the recovery time between sets should be 30 to 180 seconds with the norm around 60-90 seconds. The bottom line when addressing recovery is to listen to your body. Everyone, depending on your level of fitness, requires different recovery time. A beginner pushing too hard, will injure themselves and move further from their goals rather than closer to their goals. When beginning any fitness program it is better to start slower and increase slowly.

Let me discuss balance for a moment. It is important to include exercises that work all the major muscle groups in both the upper and lower body. One should not work just the upper body, thinking that running will strengthen the legs. Most muscles are organized into opposing pairs. Activating one muscle results in a pulling motion, while activation the opposite muscle results in the opposite, or pushing, movement. When planning a training session, it is best to follow a pushing exercise with a pulling exercise which results in movement at the same joint(s). For example, follow an overhead press with a lat pull-down exercise. This technique helps ensure good strength balance between opposing muscle groups which may, in turn, reduce the risk of injury. Sequence the program to exercise the larger muscle groups first, then the smaller muscles. For example, the lat pull-down stresses both the larger latissimus dorsi muscle of the back and the smaller biceps muscles of the arm. If curls are done first, the smaller muscle group will be exhausted and too weak to handle the resistance needed for the lat pull-down. As a result you will not be able to do as many repetitions with as much weight as you normally could in the lat pull-down. A good sequence to follow for a total-body strength workout is to first exercise the muscles of the chest, upper back, arms, abdominal, lower back, and neck followed by the muscles of the hips and legs. As long as all muscle groups are exercised at the proper intensity, improvement will occur.

Finally, let me remind you about VARIETY. A major challenge for all fitness training programs is maintaining enthusiasm and interest. A poorly designed strength-training program can be very boring. Using different equipment (free weights and resistance machines), changing exercises (select from the same muscle menu provided), and altering the volume and intensity are good ways to add variety. However, you must remember that frequent wholesale changes should be avoided as you may become frustrated if you do not have enough time to adapt or to see improvements in strength.

Building Your Strength Program

By now you should have completed your fitness assessment and know what muscle groups you want to develop and which muscle groups you want to maintain. We have also discussed the basic principals of a strength development program. So let's begin.

I have selected a sequence of exercises developed to cover all the major muscle groups. This is just a recommendation and can be altered to fit your personal needs. This program follows the concept of working out on a Workout A and Workout B schedule. Remember the fitness ethos I discussed in earlier chapters. Personal fitness is an individual responsibility and you have to commit to doing it on your own all the time. I have also listed several exercises that work the same or similar muscle groups that you can substitute to add variety to your program. Look at the chart and sit down with your fitness expert to help you develop a program best suited to you.

This addresses the strength portion of your workout. You also have to include the cardiovascular portion of your workout. This is addressed in subsequent chapters. I mention this because you always have to balance time. Some prefer to do the flexibility, strength, and cardiovascular portions all in the same workout. Others prefer to do the flexibility and strength portion in the morning or afternoon and the cardiovascular portion at the opposite time. Either method is acceptable and becomes a function of how much time you have in the day and personal preference.

Once you have developed your program, I would advise you to use the forms provided to track your progress. This is very important. As a beginner it is difficult to remember every exercise you have to accomplish. It is even more difficult to remember what weight you used at your last workout. The form provided will keep you on your program. It will also serve as a log so that you can monitor progress. You should review your progress with your fitness expert (the person that helped you develop your program) weekly for the first few months. They will help you fine tune your program and will assist in solving any early problems that may arise with your program. Attached you will find a series of exercises that you can choose from. Good Luck!

The Road to Fitness IN 4 WEEKS * **FREQUENCY:** Conduct resistance training on Mondays Wednesdays and Fridays. Alternate workouts A & B; on Monday do Workout A, Wednesday workout B, Friday workout A, and the following Monday workout B, etc. Use Tuesday, Thursday and Saturday for cardiovascular training.

WORKOUT A

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
SQUAT	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
LEG CURLS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
Deadlifts	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
WIDE-GRIP LAT PULL DOWNS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
CALF RAISES	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
ABDOMINAL				
SIT-UP 1 minute				
SWISS-BALL CRUNCH 1 minute				
REVERSE CRUNCH 1 minute				

Beginner Routine: Do one set of 12-15 reps of each exercise. Use a weight that you can lift at least 12 times. When you complete 15 reps, increase the weight at your next workout. Move quickly from exercise to exercise, resting at most 30 seconds between exercises. As you progress, decrease the rest between exercises.

SPEED: Perform each rep deliberately slower than what seems like your natural speed. This keeps your muscles under tension longer and helps build them faster.

CARDIOVASCULAR

Beginner: If you're a beginner and haven't done any cardiovascular exercise in the past 6 months, start slow. Build a base of easy jogging running 2-3 miles on Tuesday and Saturday. As soon as you can, add an additional session Thursday. Try to go 10% longer each week or run a little harder in the same amount of time. (SEE HOW TO START A RUNNING PROGRAM)

Advanced: If you have been running consistently for the past 6 months, each cardiovascular workout should be at a medium or hard pace. Run 3-5 miles on Tuesday and Saturday. You can add hills to your route or run harder in the same amount of time.

The Road to Fitness IN 4 WEEKS

* When you are working out hard and pushing yourself, remember to keep breathing. Do not hold your breath. Slowly inhale through your nose as you lower the weight and slowly exhale through your mouth as you raise it.

WORKOUT B

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
BENCH PRESS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
INCLINE BENCH PRESS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
DUMBBELL SHOULDER PRESS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
LATERAL RAISES	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
DIPS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15 reps	/	/	/	/
Set 2 12-15 reps	/	/	/	/
Set 3 12-15 reps	/	/	/	/
ABDOMINAL				
WEIGHTED SIT-UP	15-25			
REVERSE CRUNCH	15-25			
BODY TWIST	15-25			

Beginner Goals: Exercise consistently with short focused workouts. Build endurance through high-repetition strength training and moderate intensity cardiovascular exercise. See rapid increases in strength and modest gains in muscle mass. **Advanced Goals:** You'll focus more energy on strength training. Help your body recover from nagging injuries with short, low volume routines. You should leave the gym feeling satisfied if you could have done a lot more. Give your muscle building systems a boost responding from a higher-volume routine to a change in volume.

CARDIOVASCULAR

Beginner: Try to make Wednesday your long day. Run 3 miles at the same pace as your Monday and Friday run. You need to train your body to exert for a greater period of time.

Advanced: Assuming you have built a good base, you can make Wednesday an interval day. Warm-up 1 to 1 ½ miles and stretch well before you begin. Do two 1 mile repeats at 1 to 1 ½ minutes faster than your training pace. (If your training pace is 9 minutes per mile, try to run 7 ½ to 8 minute miles on a track SEE INTERVALS). Follow each mile with one or two laps recovery and a 1 to 2 mile cool-down. It is important to maintain consistency of your splits. Try not to vary more than 3-4 seconds either way on each quarter. Don't run the first two laps all out and struggle to finish.

TRAINING TIPS:

- Drastically increase your water intake. You should drink 1 ½ - 2 gallons a day.
- SUBSTITUTION: To keep variety in your program you can substitute different exercises for the intended target muscle group (SEE EXERCISES).
- ABDOMINAL ROUTINES: You will do abdominal exercises each workout. Vary the abdominal workouts by focusing on control, power and endurance on different days.
 - CONTROL: On each repetition take 3 seconds to lift your body and pause, then lower for 3 seconds.
 - POWER: Use light weights and lift your body as fast as you can, then lower in 1 second with no pause.
 - ENDURANCE: Take 2 seconds to raise your body and 1 second to lower it with no pause.

Increase Muscle Mass in 4 WEEKS * Increase workout intensity, aiming for muscle failure on 2nd and 3rd sets. Limit rest between sets to 1 minute. Your body is becoming more efficient at disposing of lactic acid, which is what fatigues your muscles.

WORKOUT A

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Leg Press	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Lunges	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Leg Curls	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Leg Extensions	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Seated Calves	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
ABDOMINAL				
Crunch Circuit	25-30			
Oblique Crunches	30-40 each side			
Superman	20-25			

For abdominal exercises continue to increase total repetitions at least 10% each week from the first 4 weeks.

CARDIOVASCULAR

Beginner: You need to increase the distance and intensity of your runs on Monday and Friday. Run 5-7 miles at a moderate pace. I would recommend a 3-mile easy run on Tuesday, Thursday and Saturday. You should be running 25-40 miles per week.

Advanced: On Monday run 5-7 miles at a moderate to brisk pace. Friday will become your interval or speed day. Begin with one repeat mile (1- 1 ½ minutes faster than your training pace). Then add two 88 or ½ miles. These half miles should be slightly faster than your half mile splits for the mile. (for example: If you run your mile repeat in 6:30, your half mile split is 3:15. Your half mile repeats should be 3:05 to 3:10). I recommend a 3-5 mile easy run on Tuesday, Thursday and Saturday. You should be running 40-50 miles per week.

TRAINING TIPS:

- Introduce more fiber into your diet. It indirectly helps your body metabolize more fat and keeps everything moving.
- Continue to increase your water intake (about 1 ½ - 2 gallons per day).

Increase Muscle Mass in 4 WEEKS * Trisets – groups of three exercises that are performed one after the other with no rest in-between (to fatigue your muscles and stimulate growth). After each triset, rest 2 minutes.

WORKOUT B

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
CHEST Triset 1	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Incline Dumbbell Bench	/	/	/	/
Flat Dumbbell Bench	/	/	/	/
Decline Dumbbell Bench	/	/	/	/
BACK Triset 2	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Lat Pull Down	/	/	/	/
Upright Row	/	/	/	/
Straight Arm Lat Pull-down	/	/	/	/
SHOULDER Triset 3	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Dumbbell Shoulder Press	/	/	/	/
Cleans	/	/	/	/
Seated Bent Over Row	/	/	/	/
ARM/BICEPS Triset 4	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Standing Bicep Curl	/	/	/	/
Preacher Curl	/	/	/	/
Hammer-Grip Bicep Curl	/	/	/	/
ARM/TRICEPS Triset 5	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Tricep Pushdown	/	/	/	/
French Curls	/	/	/	/
Tricep Kickbacks	/	/	/	/
ABDOMINAL				
Crunch Circuit	25-30			
Oblique Crunches	30-40 each side			
Superman	20-25			

Beginner Goals: Perform equal volumes of work for all upper-body parts to strengthen stabilizer muscles. Start to see significant increases in muscle size and definition. Combine cardiovascular training with resistance training to maximize benefit.

Advanced Goals: Bolster upper-body muscle and strength with multiple upper-body workouts in the same week. Increase your body's ability to tolerate max cardiovascular effort in order to improve endurance and increase metabolism.

CARDIOVASCULAR

Beginner: Tuesday will become your road march day. For week 1 and 2, march 3-4 miles in sneakers with a 10 lb rucksack. Speed at this point is not important. Continue to break your boots in during the week. For week 3 and 4, do the same march in boots.

Advanced: You will also road march on Saturdays. For week 1 and 2, march 4-6 miles in sneakers with a 15 lb. Rucksack. For week 3 and 4, do the same march in boots. Your pace for the march should be moderate, about 15 minutes per mile. DO NOT RUN.

TRAINING TIPS:

- Continue to increase your water intake (about 1 ½ - 2 gallons per day).
- Use foot powder and attempt to prevent blisters.

Get Stronger in 4 WEEKS

* Do 3-5 straight sets of 5 to 8 repetitions. Start doing 2 warm-up sets of 6 repetitions (first at 50% and second at 75% of your work sets) Do 3 sets total to begin (2 warm-up and one work set). Work your way to five total sets by the end of 4 weeks. Rest 2 minutes between sets.

WORKOUT A

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Squats	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Warm-up Set 1&2 6 reps	/	/	/	/
Set 3 5-8 reps	/	/	/	/
Set 4 5-8 reps	/	/	/	/
Set 5 5-8 reps	/	/	/	/
Lunges	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Warm-up Set 1&2 6 reps	/	/	/	/
Set 3 5-8 reps	/	/	/	/
Set 4 5-8 reps	/	/	/	/
Set 5 5-8 reps	/	/	/	/
Leg Curls	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Warm-up Set 1&2 6 reps	/	/	/	/
Set 3 5-8 reps	/	/	/	/
Set 4 5-8 reps	/	/	/	/
Set 5 5-8 reps	/	/	/	/
Leg Extensions	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Warm-up Set 1&2 6 reps	/	/	/	/
Set 3 5-8 reps	/	/	/	/
Set 4 5-8 reps	/	/	/	/
Set 5 5-8 reps	/	/	/	/
Seated Calves	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Warm-up Set 1&2 6 reps	/	/	/	/
Set 3 5-8 reps	/	/	/	/
Set 4 5-8 reps	/	/	/	/
Set 5 5-8 reps	/	/	/	/
ABDOMINAL				
Sit-ups	90 sec max			
Weighted sit-ups	45 sec max			
Incline sit-ups	30 sec max			

CARDIOVASCULAR

Beginner and Advanced: You can run six days per week now. Tuesday, run moderate to hard for 4-6 miles. Monday, Wednesday, and Friday, run easy for 3-5 miles. Vary your route, add hills or incline on a treadmill. Make sure you stretch well, warm-up and cool-down. On Saturday, do intervals. You can begin running shorter intervals. Warm-up 1 ½ to 2 ½ miles, begin with 3 X 440 followed by 3 X 330 and 3 X 220. Jog 220 between intervals. Speed is faster than training pace (SEE ADVANCED INTERVALS FOR MORE IDEAS).

TRAINING TIPS:

- You can shorten the sprints based on personal preference and facilities. Jog the same distance as the sprint after each.
- If you are trying to loose weight, make dinner your smallest meal of the day. Try to never eat after 8 PM.
- You may try high-protein, low sugar replacement bars as a snack between meals. They help feed your metabolism and ensure your muscles have the raw materials they need to keep growing.
- It is important to conduct a proper warm-up and cool-down before and after exercise. Continue to increase your water intake (about 1 ½ - 2 gallons per day).

Get Stronger in 4 WEEKS

* PRESS WORKOUT: Perform all exercises as drop sets. Do your first set of each exercise with a weight you can lift 15 times. Then do a 10 repetition drop set immediately following with about 20% less weight. Rest about 60 seconds between exercises

WORKOUT B

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
ROPE CLIMB				
Set 1 30 FT				
Set 2 (Drop) 20 FT				
CURL AND PRESS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
LATERAL RAISE	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
90-Degree Lateral Raise	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
Dumbbell Shoulder Press	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
Lateral Raise	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
Dumbbell Row	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
Triceps Kickback	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 15 reps	/	/	/	/
Set 2 (Drop) 10 reps	/	/	/	/
ABDOMINAL				
CRUNCH	35-40			
REVERSE CRUNCH	20-25			
FLUTTER KICKS	35-50			

Goals: Perform low-repetition sets with heavier weights than you've been using (This will rapidly improve your strength). Do longer cardiovascular intervals. Improve shoulder-joint integrity to help keep yourself injury-free.

CARDIOVASCULAR

Beginner and Advanced: Tuesday will continue to be your road-march day. Slowly increase distance to comfortably march 6 miles at 15 minute per mile pace or less with a 25 lb rucksack in boots. Breaking in both pairs of boots are key to not getting blisters. You can vary your route and add hills but DO NOT RUN.

TRAINING TIPS:

- You can add grass drills or an obstacle course (if available) for your Thursday cardiovascular workout.
- Learning the proper technique to climb a rope prior to the National Advanced Leadership Camp is essential to success at camp.

4 WEEKS TO Airborne School

* Practice jump squats with feet and knees together. Reduce the rest time between work sets to fatigue muscles and stimulate muscle growth.

WORKOUT A

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Jump Squat	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Leg Curls	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Dumbbell Step-ups	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Standing Calf Raises	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
ABDOMINAL				
Sit-ups	50-100			
Crunches	50-100			
Flutter Kicks	25-50			

CARDIOVASCULAR

Beginner and Advanced: After following '4 Weeks to More Muscle' and '4 Weeks to More Strength', you should have improved your running ability. Focus during this period on increasing the distance of each run (5-8 miles) and increase the intensity. Practice running in formation (where possible) and increase the pace each mile. For example; run the first mile at 9 minutes per mile, the second at 8:50 per mile, the third at 8:40 per mile, the fourth at 8:30 per mile etc. You might want to schedule your runs at noon to get used to running in heat (if possible). Run in sneakers but continue to break in your boots. Jumping rope and one-legged hops should be added to help develop your stabilizer muscles around the knees and ankles.

TRAINING TIPS:

- As you are exercising harder, it is important to eat 3 meals a day. It is also recommended to eat a high-protein, low sugar replacement bar as a snack between meals.
- It is important to conduct a proper warm-up and cool-down before and after exercise. Continue to increase your water intake (about 1 ½ - 2 gallons per day).
- THIS IS A 12 WEEK PROGRAM. WEEK 1-4: FOLLOW '4 WEEKS TO MORE MUSCLE'; WEEK 5-8: FOLLOW '4 WEEKS TO MORE STRENGTH'; FOLLOW THIS PROGRAM FOR WEEKS 9-12.

WORKOUT B

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Pull-ups	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Reverse Close-grip Lat Pull-downs Using Rope	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Deadlift	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
Push-ups (Regular)	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 25-50	/	/	/	/
Set 2 25-50	/	/	/	/
Set 3 25-50	/	/	/	/
Push-ups (Close)	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 25-50	/	/	/	/
Set 2 25-50	/	/	/	/
Set 3 25-50	/	/	/	/
Front Raises	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Set 1 12-15	/	/	/	/
Set 2 12-15	/	/	/	/
Set 3 12-15	/	/	/	/
ABDOMINAL				
Crunches	50-100			
Reverse Crunches	25-50			
Flutter Kicks	25-50			

CARDIOVASCULAR

Beginner and Advanced: On Wednesdays, focus on improving your speed by doing a series of short intervals. Warm-up 1 ½ - 2 miles, begin with 2 X 440 followed by 6 X 220. Jog 220 between intervals. You can adjust the distance but keep it short (SEE ADVANCED INTERVALS FOR MORE IDEAS). Follow all intervals with a good cool-down.

TRAINING TIPS:

- You may want to add grass drills or an obstacle course (if available) between your press workout and cardiovascular workout. This will add variety to your program.
- Continue to increase your water intake (1 ½ - 2 ½ gallons per day). Don't forget to continue to break your boots in. Your feet will thank you during Airborne School.
- A substantial part of Airborne School is mental. If you follow these workouts you should have increased confidence in yourself and your physical condition. Learn to get mentally tough.

WORKOUT A

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
OBSTACLE COURSE OR CIRCUIT The ideal Obstacle Course would replicate what is found at Air-Assault School. If this is not available, develop a Circuit that includes a rope climb and 6 foot wall at a minimum. Run a minimum of 30 seconds between obstacles.				
GUERRILLA CIRCUIT Conduct each exercise for 20-40 seconds with no rest between				
All Fours Run	20-40 sec	20-40 sec	20-40 sec	20-40 sec
Broad Jump	20-40 sec	20-40 sec	20-40 sec	20-40 sec
Crab Walk	20-40 sec	20-40 sec	20-40 sec	20-40 sec
Jump Squat	12-15 Reps	12-15 Reps	12-15 Reps	12-15 Reps
AGILITY EXERCISES				
Hour Glass Drill				
Tree Line Shuffle Drill				
Ski Hops				
Star Drill				
ABDOMINAL				
SIT-UPS	50-100			
SIDE RAISE (Left)	15-25			
SIDE RAISE (Right)	15-25			

CARDIOVASCULAR

Beginner and Advanced: After following '4 Weeks to More Muscle' and '4 Weeks to More Strength'; you should have improved your running ability. On Mondays and Fridays focus on Rucksack Marching. March 5-8 miles on Monday with a light rucksack (15-20 lbs) and 8-10 miles on Friday with a heavier rucksack (20-35 lbs). March at 15 minutes per mile pace or less. DO NOT RUN. If boots are broken in, march in boots. Use sneakers until your boots are broken in to prevent blisters. You should run 3-4 miles Tuesday, Thursday and Saturday at an easy pace.

TRAINING TIPS:

- In addition to increasing your water intake (about 1 ½ - 2 gallons per day), you need to increase your water intake while marching. Practice drinking from your canteen while marching.
- It is important to master the Roadmarch. This is the single event that fails most students. You will be required to do a 6 mile roadmarch in 90 minutes and a 12 mile roadmarch in 3 hours.
- THIS IS A 12 WEEK PROGRAM. WEEK 1-4: FOLLOW '4 WEEKS TO MORE MUSCLE'; WEEK 5-8: FOLLOW '4 WEEKS TO MORE STRENGTH'; FOLLOW THIS PROGRAM FOR WEEKS 9-12.

The Last 4 WEEKS to NALC and Air-Assault School . * After your warm-up, do 3 straight work sets of 5-8 repetitions. For pull-ups and push-ups, do negative repetitions to achieve muscle failure. Rest 2 minutes between sets.

WORKOUT B

EXERCISE	WEEK 1	WEEK 2	WEEK 3	WEEK 4
BENCH PRESS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Flat 5-8 Reps	/	/	/	/
Incline 5-8 Reps	/	/	/	/
Decline 5-8 Reps	/	/	/	/
Dumbbell Shoulder Press	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Work Set 1 5-8 Reps	/	/	/	/
Work Set 2 5-8 Reps	/	/	/	/
Work Set 3 5-8 Reps	/	/	/	/
BICEPS CURL	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Work Set 1 5-8 Reps	/	/	/	/
Work Set 2 5-8 Reps	/	/	/	/
Work Set 3	/	/	/	/
TRICEPS PUSHDOWN	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Work Set 1 5-8 Reps	/	/	/	/
Work Set 2 5-8 Reps	/	/	/	/
Work Set 3 5-8 Reps	/	/	/	/
MACHINE ROW	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Work Set 1 5-8 Reps	/	/	/	/
Work Set 2 5-8 Reps	/	/	/	/
Work Set 3 5-8 Reps	/	/	/	/
PULL-UPS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Wide 8-10 Reps	/	/	/	/
Wrist-out 8-10 Reps	/	/	/	/
Wrist-in 8-10 Reps	/	/	/	/
PUSH-UPS	Weight/Reps	Weight/Reps	Weight/Reps	Weight/Reps
Wide 25-50 Reps	/	/	/	/
Regular 25-50 Reps	/	/	/	/
Close 25-50 Reps	/	/	/	/
ABDOMINAL				
ELEVATED SIT-UPS	50-100			
INCLINE KNEE-UP	25-50			
CYCLING TWIST	25-50			

CARDIOVASCULAR

Beginner and Advanced: On Wednesdays, focus on improving your speed by doing a series of short sprints. After a 1 ½ - 2 mile warm-up, begin with 2 X 220 followed by 4 X 110. Jog equal distance between intervals. You can adjust the distance but keep it short (SEE ADVANCED INTERVALS FOR MORE IDEAS). Follow all intervals with a good cool-down.

TRAINING TIPS:

- Wednesdays will be short workouts. Work on form and technique. Go back to the Obstacle Course or Circuit after your cardiovascular workout to practice any obstacle that needs work.
- Use spotters or pads on all high level obstacles. Think Safety.

Exercises

All fours run

Bench Press

- Lie on a bench, face up. Position your legs at the sides of the bench with your feet flat on the floor.
- Grip the bar at slightly wider than shoulder width, or hold dumbbells shoulder width apart and raise the weight to arms length above the chest.
- Slowly lower the weight to the chest. Exhale as you raise the weight and inhale as the weight is lowered. Try not to arch your lower back.
- This exercise can be performed with a close, medium or wide grip on a barbell, or with dumbbells

Bicep Curl

Body Twist

Broad Jump

Calf Raise

Chin-up

Clean

Crab Walk

Crunch Circuit

Crunch

Cycling Twist

Deadlift

Dips

Dumbbell Bench Press – see bench press

Dumbbell Row

Dumbbell Shoulder Press

Dumbbell Step-ups

Elevated Sit-ups

Flutter Kicks **CHEST EXERCISES**

FREE WEIGHTS

Bench Press

- Lie on a bench, face up. Position your legs at the sides of the bench with your feet flat on the floor.
- Grip the bar at slightly wider than shoulder width, or hold dumbbells shoulder width apart and raise the weight to arms length above the chest.
- Slowly lower the weight to the chest. Exhale as you raise the weight and inhale as the weight is lowered. Try not to arch your lower back.
- This exercise can be performed with a close, medium or wide grip on a barbell, or with dumbbells

Bench Press - Decline Bench

- Same as Bench Press but using a Decline Bench.

Bench Press - Incline Bench

- Same as Bench Press but using a Incline Bench.

Flys - Flat Bench

- Lie face up on a flat bench, grasp a dumbbell in each hand and place them at arm's length above your shoulders with palms facing inward and the arms straight.
- Using a semi-circular motion (as if you were hugging a big barrel), lower the weights out to each side of the chest, keeping your elbows slightly flexed.
- Return to the starting position.

Flys - Incline

- Same as Flys – Flat Bench, but on an incline bench.

Flys - Decline Bench

- Same as Flys – Flat Bench, but on a decline bench.

Dumbbell Pullover

- Lean your shoulders and upper back across a flat bench with your body perpendicular to the bench. Your feet should be flat on the floor.
- Hold a dumbbell directly over your head with your arms straight.
- Slowly lower the weight back behind your head until your arms are parallel to the floor.
- Raise the weight to the starting position.
- *This is an intermediate to advanced exercise.*

RESISTANCE MACHINES

Cable Cross Over

- Stand with your feet shoulder width apart and your arms extended holding a cable in each hand
- Keeping your arms fairly straight, move your arms in a diagonal direction in front of you crossing them at your waist.
- Return to the starting position slowly fully in control of the weight.
- Repeat for all subsequent repetitions.

Dips - Seated

- Sit on the edge of a flat bench (or chair) with another bench (or chair) positioned a full body length in front of you.
- Support yourself so that your feet and ankles are on one bench and your hands are on the other. Your body weight should be on the palms of your hands, which should be extended behind you so that your buttocks are lifted off the chair.
- Keep your elbows into your sides and lower your body downward as far as possible.
- Pause briefly and then press yourself upwards until your arms are straight and you are back at the starting position.
- Be careful that the benches (or chairs) are secure and will not tip over during exercise.

Parallel Dips

- Position yourself between a set of parallel bars and lift yourself so that you are held erect by your arms, with your elbows at your sides.
- Keep your elbows into your sides while lowering your body down as far as possible.
- Pause a moment and then press yourself back up to arm's length, until your elbows are again locked at the starting position.

BODY RESISTANCE

Pushups

- Lie face down on the floor and position your hands at 6 inches apart, 24 inches apart, or as wide as possible for the close, medium or wide variations, respectively.
- Your palms should be down, in contact with the floor. Your legs and body should be straight and your head should be in line with the spine.
- Press yourself upwards, fully extending your elbows and supporting the lower body on the toes. Alternately, this exercise can be performed with the knees bent - supporting the lower body on the knees.
- Return to the starting position.
- *Strengthens chest, triceps and deltoids*

Pushups - Inverted

- Stand on your hands with your legs straight and supported against the wall. Your hands should be at shoulder width apart and your arms should be fully extended.
- Lower your head toward the floor by flexing your elbows.
- Push your body back to the starting position.
- *Strengthens the chest, triceps and deltoids.*

Pushups - Legs Elevated

- Position your hands at 6 inches apart, 24 inches apart, or as wide as possible for the close, medium, or wide variations respectively.

- Your palms should be down, in contact with the floor. Your legs should be elevated on a bench or chair and your body should be straight.
- Press yourself upwards, fully extending your elbows.
- Return to the starting position.
- *Strengthens chest, triceps and deltoids.*

Chest Press

- Lie on the floor or on a "step" bench, face up. Bend your knees and place your feet flat on the floor.
- Using an Xertube or a resistance band, stretch the band behind your back or under the step bench and grasp an end in each hand.
- Position your hands on top of your chest, with your elbows pointing out.
- Straighten your arms, pressing your hands toward the ceiling. Do not arch your lower back.
- Slowly lower your hands back to the chest.
- If you do not feel tension when pressing up, adjust the band so there is less slack.

SHOULDER EXERCISES

FREE WEIGHTS

Military Press

- Stand with feet shoulder width apart, or sit at the end of a bench with feet flat on the floor. Contract abdominal and lift rib cage to keep torso upright.
- Grasp a bar or dumbbells with an overhand grip or a reverse grip. Lift the weight to shoulder height, elbows pointing down to your sides.
- Straighten the arms, pressing the weight overhead.
- Keep shoulders down by pressing shoulder blades together.
- Lower the weight to the shoulder level and repeat.
- This exercise can also be done on a resistance machine
- *Strengthens shoulders and upper back.*

Clean and Press

- Stand with feet shoulder width apart. Contract abdominal and lift rib cage to keep torso upright.
- Grasp a bar or dumbbells with an overhand grip. Lift the weight to shoulder height in one movement, elbows pointing down to your sides and keeping your back erect.
- Straighten the arms, pressing the weight overhead.
- Keep shoulders down by pressing shoulder blades together.
- Lower the weight to shoulder level and then keeping your back erect and bending at the knees, lower the weight to the ground and repeat.

Lateral Raise

- Sit on the end of a bench with your feet flat on the floor, or stand with your feet shoulder width apart.
- Grasp a dumbbell in each hand, and hold them down to your sides with palms facing inward.
- Raise the weights laterally (to the side) and upward until slightly higher than shoulder level.
- Your elbows should remain slightly bent.
- A modification to this exercise is bending your arms 90 degrees and raising the weight upward until your elbows are slightly higher than shoulder level and the weight is facing forward.
- Lower the weight to the starting position.
- This exercise can also be done on a resistance machine.

Shoulder Press - Behind the Neck

- Sit at the end of a bench with your feet flat on the floor, or stand with your feet shoulder width apart.
- Grasp a barbell 4-6 inches wider than shoulder width, then press the barbell overhead, placing it behind your head and resting it on your shoulders.
- Press the weight overhead, extending your arms straight up. Your elbows should remain pointing outward.
- Slowly lower the weight to the starting position.

Shoulder Raise - Bent Over

- Bend over from the waist with your knees slightly bent.
- Grasp the dumbbells, keeping your elbows and arms straight and palms facing one another.
- Raise the dumbbells laterally (outward from your body toward the side) until the arms are parallel to the floor.
- Slowly lower the arms back down and repeat.

Shoulder Raise - Front

- Standing with your feet shoulder width apart, grasp a barbell or dumbbells with an overhand grip.
- Let the weight hang at arm's length against your upper thigh.

- Raise the weight straight out in front of you until it is just above shoulder level.
- Lower the weight to the starting position.

Front Raise – Pullover

- Stand with your feet shoulder width apart, flat on the floor.
- Hold a weight in front of your waist, with both hands and your elbows bent approximately 90 degrees.
- Keeping your elbows bent raise the weight over your head.
- Pause with the weight over your head and return to the start position.

Rear Dumbbell Raise

- Sit on the edge of a bench with knees bent and feet flat on the floor, a set of dumbbells on the floor behind your heels.
- Bend from your hips until your chest is resting on your thighs and back is flat.
- With arms at your sides, grasp a weight in each hand, palms facing each other with elbows slightly bent.
- Maintain torso and arm position and, leading with your elbows, lift weights up to shoulder height in an arc so palms are facing the floor.
- Keep elbows higher than weights and use your upper back muscles, not your arms, to do most of the work.
- Return to the starting position and repeat.
- *Strengthens chest and upper back.*

Row - Upright

- Stand with your feet shoulder-width apart. Grasp a barbell or dumbbells with an overhand grip.
- With the weight at arms length and your back straight, inhale and raise the weight to just below chin level. Keep your elbows out to the side.
- Pause momentarily, then exhale and return the weight to the starting position.

Standing or Seated Shrug

- Stand with feet shoulder width apart, or sit at the end of a flat bench with your feet flat on the floor. Hold a dumbbell in each hand with a palm inward grip and your arms at your side.
- Raise your shoulders as high as possible.
- Return to the starting position and repeat.

RESISTANCE MACHINES

Vertical Row

- Sit at the vertical row machine with your feet flat on the floor and the pad centered on your chest.
- Grip the handles and slowly pull the bar toward the chest, focusing on contracting the back muscles and trying not to rely too heavily on the arm muscles.
- Slowly bring the bar back to starting position.

- *Strengthens upper back and shoulders.*

Front Lat Pulldown

- Sit in front of a high-cable pulley machine and grasp a long bar with an overhand grip, hands slightly wider than shoulder-width apart and palms facing forward.
- Holding the bar, sit on the bench, knees bent under the leg pads and feet flat on the floor. Your arms should be extended overhead.
- Keeping your torso erect, exhale as you pull the bar down to your upper chest.
- Lean back slightly, squeezing shoulder blades together as the bar touches your chest.
- Slowly return to the starting position and repeat.
- *Strengthens upper and middle back; trapezius and latissimus dorsi; rear shoulder and biceps.*

BODY RESISTANCE

Isometric Lat-Pull

- Stand with your shoulders low and relaxed, chest and rib cage lifted, and abdominal contracted. Raise your arms over your head and cross your wrists. Make two fists with your hands.
- Contract the muscles in your arms, shoulders and upper back and hold the contraction.
- Press your elbows down slowly to each side, squeezing your shoulder blades together, until your fists are level with your shoulders.
- Continuing to contract the muscles, raise your arms to the starting position.
- *This exercise works your upper back, shoulders and arms without weights, so you can perform the movement anywhere, anytime. Imagine you're holding a heavy object in each hand and use your mind to work the muscles.*

Pull-Up - Behind the Neck

- Hang from a chinning bar, using a pronated grip with either wide or medium spacing.
- Pull yourself upward until the back of your neck touches the bar.
- Return to the starting position with your body hanging at arm's length.
- *Strengthens upper back and biceps.*

Pull-Up - To Chest

- Hang from a chinning bar, using either a pronated grip or a supinated grip, with your hands spaced at either close, medium, or wide spacing.
- Pull yourself upward until your chest touches the bar.
- Return to the starting position with your body hanging at arm's length.
- *Strengthens the upper back and biceps.*

BACK EXERCISES

FREE WEIGHTS

Dead Lift

- Assume a half-squat position with your feet parallel and about shoulder-width apart.
- Grasp a barbell with your hands and arms outside your legs, keeping your back straight, lower back arched and your head up. Stand to an erect position, keeping your arms straight and your shoulders moving directly upwards.

Row - Bent Over

- Place a barbell or dumbbells on the floor in front of you.
- With your feet about shoulder width apart, bend down and grasp the weight with an overhand grip, approximately 12-14 inches apart.
- Bend your knees slightly and keep your back parallel to the floor as you lift the weight to your chest.
- Lower the weight down in front of you until it is at arm's length, then raise the weight back to the chest.
- Do not let the weight touch the floor as you exercise.
- Keep your head up and your lower back slightly arched.

Row - Single Arm, Bent Over

- Place a dumbbell on the floor in the front of the bench. Put your right leg back, keeping your knee straight.
- Bend your left leg slightly as you bend down and grasp the dumbbell with your right hand with palms facing inward.
- Place your left hand on the bench and keep the arm straight.
- With the dumbbell in your right hand, hanging straight down, bend you elbow and raise the weight straight up to the side of your chest, keeping your arm in close.
- Return to the starting position and repeat with the opposite side.

Incline Row

- Lie face-down on an incline bench with your chin over the edge. Straddle your legs on either side of the bench and rest your feet on the floor.

- With a dumbbell in each hand, reach your arms straight down from your shoulders, palms facing the rear.
- Pull the weight up toward your shoulders, squeezing your shoulder blades together. Rotate your palms inward and keep your elbows in close to your body.
- Pause at the top and then lower the weight to the starting position.

Seated Row - Bent Over

- Sit on a chair or the edge of a bench. Place dumbbells on the floor on either side of your feet.
- With your feet and knees together, bend down and grasp the weights with your palms facing toward the body. Your chest should be resting on your thighs.
- Keeping your back flat and chest in contact with your thighs, bend the elbows and pull the weight back toward your shoulders in a rowing motion. Squeeze your shoulder blades together as you pause briefly.
- Lower the weight slowly, but do not let the dumbbells rest on the floor. Repeat.

Rear Dumbbell Raise

- Sit on the edge of a bench with knees bent and feet flat on the floor, a set of dumbbells on the floor behind your heels.
- Bend from your hips until your chest is resting on your thighs and back is flat.
- With arms at your sides, grasp a weight in each hand, palms facing each other with elbows slightly bent. Bring your hands together behind your heels
- Maintain torso and arm position and, leading with your elbows, lift weights up to shoulder height in an arc so palms are facing the floor. Squeeze the shoulder blades together.
- Keep elbows higher than weights and use your upper back muscles, not your arms, to do most of the work. Keep the chest against the thighs and the elbows rounded.
- Return to the starting position and repeat.
- *Strengthens chest and upper back.*

Hyperextension

- Lie face down on a hyperextension bench (roman chair).
- Bend at the hips until your upper body is vertical with the floor.
- Raise your trunk until slightly past parallel with the floor.
- Return to the starting position.

RESISTANCE MACHINES

Front Lat Pulldown

- Sit in front of a high-cable pulley machine and grasp a long bar with an overhand grip, hands slightly wider than shoulder-width apart and palms facing forward.
- Holding the bar, sit on the bench, knees bent under the leg pads and feet flat on the floor. Your arms should be extended overhead.
- Keeping your torso erect, exhale as you pull the bar down to your upper chest.
- Lean back slightly, squeezing shoulder blades together as the bar touches your chest.
- Slowly return to the starting position and repeat.
- *Strengthens upper and middle back; trapezius and latissimus dorsi; rear shoulder and biceps.*

Pullovers

- Lie face up on a flat bench with your head at one end of the bench.
- Grasp a barbell with your hands spread about 24 inches apart. Place the bar at arm's length above your head. If using a dumbbell, place your hands flat against the inside plate of the dumbbell and raise the weight to arm's length above the chest.
- Lower the weight overhead, keeping your arms straight.
- Return to starting position.

Single Cable Pull-Down

- Attach a D-handle to the upper assembly of a cable machine. Grasp with the right hand, turning the right shoulder toward the machine and facing away from it at a 90-degree angle.
- Keep the arm nearly straightened, but don't lock the elbow. Pull the handle down to eye level. This is the starting position.
- Using the back muscles, pull the handle down near the right thigh. Return to starting position slowly.

Seated Row

- Sit at the vertical row machine with your feet flat on the floor and the pad centered on your chest.
- Grip the handles and slowly pull the bar toward the chest, focusing on contracting the back muscles and trying not to rely too heavily on the arm muscles.
- Slowly bring the bar back to starting position.
- *Strengthens upper back and shoulders.*

BODY RESISTANCE

Glute Kickbacks

- Position yourself on the floor resting on your hands and knees.
- Bend and pull your right knee in to your chest.

- Straighten your leg, lifting it upwards and backwards, extending your knee and hip as far as possible. Be careful to complete the movement slowly and deliberately.
- Perform one set of repetitions, then repeat with the opposite side.
- *Strengthens glutes, hamstrings and lower back.*

Lower Back Extensions

- Lie on your stomach flat on the floor or a mat. Extend your arms straight out above your head.
- Keeping your head in line with your spine, lift your right leg and left arm off the floor, contracting the muscles in the back.
- Hold briefly, then relax. Repeat by lifting the left leg and right arm.

ARM EXERCISES

FREE WEIGHTS

Bicep Curl – Standing or Sitting

- This exercise can be performed using a barbell with a supinated grip, or a pronated grip, or with dumbbells using a hammer grip.
- Stand with your feet shoulder width apart, or sit at the end of a bench or chair with feet flat on the floor. The weight should be hanging at your side (dumbbells) or in front of you (barbell) at arm's length.
- Curl the weight toward your shoulders by fully flexing your elbows.
- Slowly return to starting position.

Bicep Curl - Alternating Arms

- This exercise can be performed seated or standing.
- Hold a dumbbell in each hand.
- Keep your back straight and your feet on the floor.
- The dumbbells should hang at arm's length with your palms facing outwards (pronated).
- Curl the weight toward your shoulders by bending at the elbows.
- Lower the weight slowly to the starting position and repeat with the opposite arm.

Bicep Curl - Concentration

- Grasp a dumbbell in your right hand and sit on a bench with your feet on the floor.
- Hold the weight in front of you, hanging at arm's length between your legs with an underhand grip.
- Bend slightly at the waist and place your left hand on your left knee for support.
- Rest your upper right arm against your inner right thigh slightly above your knee.
- Without bending the wrist, raise the weight toward your shoulder in a curl motion, keeping your upper arm vertical with the floor.

- Slowly return to the starting position.
- Repeat with opposite side.

Bicep Curl - Preacher

- While seated on a preacher bench, grasp a barbell or dumbbells using a supinated or pronated grip.
- Curl the weight towards your shoulders by flexing your elbows as much as possible.
- Slowly return to the starting position.

Triceps Extension

- Sitting or lying on a bench, with your feet flat on the floor.
- Holding the bar with a normal grip about shoulder width, raise the bar behind your head. Your elbows are bent at a 90 degree angle with your lower arm and elbow pointing upward.
- Raise the bar keeping your upper arm still and bending at the elbow to a full up-right position.
- Complete the repetition by returning the bar to the behind the head position.
- Make sure that you are keeping your upper body still and doing the work with your triceps.

Overhead Triceps Extension

- Sit at the end of a bench or stand with your feet shoulder width apart.
- Grasp a dumbbell in each hand with a palms down grip and press the dumbbells overhead so your arms are fully extended and your hands are facing one another.
- Bend the elbows and lower the weight, while keeping your upper arms vertical, your elbows pointing toward the ceiling.
- Keep your back straight, your head up, and your elbows straight toward the ceiling.
- Continue until your biceps and forearms touch.
- Lift the weight back to the starting position.
- *This exercise can also be performed with an angle bar, or with one arm at a time.*

Triceps Kickback

- Hold a dumbbell in your right hand with the palm facing inward.
- Bend at the waist until your upper body is almost parallel with the floor. Place your left hand on a bench (or on your upper thigh) for support.
- Bend your knees slightly and keep your abdominal muscles tight.
- Raise your right elbow and upper arm to the back, keeping your elbow in tight to your body.
- Press the dumbbell backward, straightening your elbow until your entire arm is parallel to the floor.
- Hold briefly, then lower the weight.
- Perform one set, then repeat with the opposite arm.

Skullcrushers

- Lie on your back on a flat bench and grasp a barbell with both hands, using an overhand grip with hands spaced 12-14 inches apart.
- Press the bar straight up to arm's length, keeping it in line with your shoulders.
- Bend the elbows and lower the weight toward your forehead. Keep your upper arms vertical, your elbows pointing toward the ceiling.
- Press the weight back to arm's length above the shoulders and repeat.

Close Grip Chest/Tri Press

- Lie on your back on a bench and hold a barbell at chest level with a close, overhand grip (hands about 6 inches apart).
- Press the weight straight up above the chest by straightening the arms.
- Bending the elbows, lower the weight toward your forehead. Be sure to keep the elbows pointing straight up toward the ceiling.
- Press the weight back up by straightening the arms, then lower down to the starting position at the chest.
- *This is a combination exercise for the chest and triceps that can save you time in the gym.*

Wrist Curl

- Grasp the barbell or dumbbells with an pronated or a supinated grip while sitting on the end of a flat bench with your feet flat on the floor.
- Lean forward and place your forearms on your upper thighs or on the bench between your legs. Your hands should extend slightly past your knees.
- Lower the weight until your wrists are fully flexed.
- Extend your wrists upwards as far as possible. Be sure that you don't move your forearms from your thighs or the bench.
- Return to the starting position.

Wrist Curl - Behind the Back

- Place a barbell on the floor behind you.
- With your arms straight and the back of your hands resting on your buttocks, squat down and pick up the bar, using a palm down grip. Then return to a standing position.
- Curl your wrists as high as possible.
- Slowly lower the wrists to return to the starting position.

RESISTANCE MACHINES

Biceps Curl

- Sit at the Biceps machine with your feet flat on the floor.
- Grasp the bar with a pronated or supinated grip resting your elbows on the pad in front of you.
- Keeping your elbows on the pad, bring the bar to your chest.
- Return the bar to the start position and repeat.

Triceps Extension

- Sit at the Triceps extension machine with your feet flat on the floor.
- Place your elbows on the pad and bending 90 degrees, place the knife edge of your hand flat on the hand pad which is approximately at shoulder level.
- Bending at the elbow and keeping your elbow on the elbow pad, extend your hands lowering the machine to a fully extended position.
- Return the machine slowly to the start position and repeat.

Dumbbell or Rope Hammer Curl

- Using a rope handle at a cable machine, grasp one end of the rope in each hand.
- Start with your elbows close to your sides and your forearms at a 90-degree angle to your upper arms.
- Pull the rope straight up, moving your hands toward your shoulders without letting your elbows move away from your sides.
- Lower the weight slowly, fighting the resistance.

Triceps Pressdown

- Facing a high-cable pulley machine, stand with your feet hip-width apart and knees slightly bent.
- Grasp the ends of the bar or ropes attached to a high-cable pulley, palms facing each other. Hold elbows close to body at waist level.
- Without altering elbow position, press your arms down until hands drift apart and palms face behind you.
- Return to starting position and repeat.
- your feet flat on the floor.

LEG EXERCISES

FREE WEIGHTS

Squat

- Stand with your feet shoulder width apart and your hands on your hips.
- Keep your head up and your back straight as you bend your knees. Lean slightly forward at the waist.
- Squat down until your upper thighs are parallel to the floor, keeping your knees in line above your ankles.
- Straighten your legs and return to the starting position.

Lunge - Alternating

- Stand erect and place your hands on your hips. Keep your head up, trunk straight and feet shoulder width apart.
- Step forward with your right leg, bending the knee until the right thigh is nearly parallel to the floor. Keep the bent knee in line with your ankle.
- Step back to the starting position by pushing off with the heel of the right foot.
- Repeat with the opposite side.

Lunge - Side

- Stand erect with your hands on your hips, with your head up and your feet slightly apart.
- Bend your right knee and step to the right as far as possible, or until your upper right thigh is almost parallel to the floor. Be sure the right knee does not extend past the right ankle. Your left leg should be held as straight as possible, realizing that the knee must bend somewhat.
- Return to the starting position and repeat with the opposite side.

Step-Ups

- Stand in front of a step or an object similar in height.
- Hold a dumbbell in each hand. You can bend your arm to match normal arm movement when going up stairs.
- Keep your head up as you step onto the step one foot at a time. With both feet on the step, return to the starting position by stepping down one foot at a time.
- Alternate your leading foot when going up and down.
- Control your breathing so that you sustain a slow, rhythmic pattern.

RESISTANCE MACHINES

Leg Extension

- Sit erect on a leg extension machine, knees bent over the edge of the seat, feet and ankles behind the pads in front of your shin.
- Holding the handles at the base of the seat and keeping your upper body still, extend your legs by pushing forward with your shin while raising the foot pads.
- Return to the start position slowly and repeat.

Leg curl

- Lie facedown on a leg-curl machine so the edge of the bench is just above your knees and your ankles are under the pads.
- Rest your chin on the bench, keeping your back flat and hips on the bench throughout the movement.
- Pull heels up toward buttocks.
- Slowly lower to starting position and repeat.
- *Works gluteals and hamstrings. Level: Intermediate/Advanced.*

Double Leg Press

- On a leg press machine, place feet in the middle of the footpad. Adjust the seat so your knees form a 90-degree angle.
- Push against the footpad until your knees are almost fully extended.
- Slowly lower back to the starting position.
- *Works quadriceps, hamstrings and gluteals. Level: All levels.*

Leg Raise - Abductor

- Lie on the floor on your left side with your left knee pulled toward your chest. Your right leg should be in line with your right shoulder and the leg should be straight.
- Lift your right leg. The heel of your foot should lead and your toes should be pointing downward.
- Return to the starting position.
- Perform one set of reps, then repeat with the opposite side.
- *Strengthens abductor (outer thigh) muscles.*

Leg Raise - Adductor

- Lie on the floor on your right side with your left leg bent forward in front of your right leg.
- Keep your right leg straight and lift the right leg (the lower leg) upwards as high as possible.
- Return to starting position.
- Perform one set of reps and then repeat with the opposite side.
- *Strengthens adductor (inner thigh) muscles.*

Calf Raise - Seated

- Sit erect on a calf machine, knees bent under pads, toes and balls of your feet on the toe block, heels pressed down.
- Lift up on toes as far as possible.

- Return to starting position and repeat.
- *Works calves. Level: All levels.*

BODY RESISTANCE

Bench Jumps

- From a standing position, bend your knees slightly and jump to the side (laterally), pushing off with both feet and landing up on a low bench/step. (Beginners may start out without the bench and simply land on the floor.)
- Come to a full stop, then jump off the other side of the bench and repeat.
- *Works quadriceps and hamstrings and builds explosive power. Great training for skiing. Level: All levels.*

Calf Raise - Standing

- Start from a standing position, raise up on your toes and then return to the starting position.
- You can modify this exercise by bending one leg behind you, slightly off the ground with all weight on the leg being exercised.
- If you exercise one leg at a time, perform one set of repetitions, then repeat with the opposite leg.
- Do this exercise slowly.

Hamstring Lift

- Position yourself on your hands and knees. Lower yourself down to your elbows, making sure the elbows stay directly under your shoulders. Keep your back straight and your abs pulled in tight.
- Keeping the knee bent, lift the foot toward the ceiling until the thigh is parallel to the floor. Squeeze the buttocks and be sure not to lift the thigh higher than hip-level.
- Lower the leg and repeat.
- Perform one set of reps, then repeat with the opposite leg.

Knee Raise - Standing

- Stand with your feet slightly wider than shoulder width and with your arms resting at your side.
- Bend and raise your right knee toward your right shoulder as far as possible, keeping your back straight.
- You can modify this exercise by bending and raising your right knee towards your left elbow, which you simultaneously move towards your right knee. The movement should twist your upper body towards the right and your lower body towards the left.
- Return to starting position and repeat with opposite side.

Wall Sit

- Lean against a wall with your feet hip-width apart and about 12 inches away from the wall.
- Slide your back down the wall, bending your knees until your thighs are parallel to the floor.
- Hold for 15 seconds, then slide back up to the starting position.
- Try to hold the position for a few seconds longer each time you perform the exercise.
- *This exercise is a great primer for ski season!*

ABDOMINAL EXERCISES

RESISTANCE MACHINES

Ab – Roller

- Lie flat on the ground with your head under the ab-roller bar, knees bent and feet flat on the ground.
- Place your elbows on the elbow pads and grip the ab-roller bar over your head with a normal grip, hands approximately shoulder width apart.
- Keeping your elbows on the elbow pads, attempt to pull the bar to your waist.
- Return the bar to the start position slowly and repeat.

Oblique Twist

- Sit erect on a torso oblique twist machine with your arms behind the torso pad bar and your feet flat on the floor.
- Keeping a clenched fist and only turning your upper body, twist as far as you can to your left.
- Pause and slowly return the torso pad bar to the start position. Repeat.
- When you finish turning left, adjust the machine at the base of the seat to turn in the opposite direction.
- Repeat the procedure turning the torso pad bar as far as you can to the right.
- Pause and slowly return the torso pad bar to the start position. Repeat.

BODY RESISTANCE

Sit-up – With and Without Weights

- Lie flat on the ground with your knees bent and your feet flat on the ground. Your hands are interlaced behind your head with your elbows bent and pointing outward.
- Keeping your feet flat on the ground, raise your body bending at the waist until your chest touches the front of your knees. Keep your upper body erect. Your hands remain behind your head with fingers interlaced.
- Return to the start position and make sure that your shoulder blades touch the ground. Repeat.
- A modification to this exercise is to place a weight on your chest holding the weight by crossing your arms over your chest.

- Repeat the sit-up as described above.

Sit-Up - Incline

- Lie face up on an incline board with your feet at the high end. Place your feet under the foot strap.
- Bend your knees to a 45 degree angle and place both hands behind your head.
- Raise your shoulders upward towards your knees as far as possible. Do not pull on the neck, use the abdominal.
- Return to the starting position.

Sit-up – With Twist

- Lie flat on the ground with your knees bent and your feet flat on the ground. Your hands are interlaced behind your head with your elbows bent and pointing outward.
- Keeping your feet flat on the ground, raise and twist your body bending at the waist until your left elbow touches your right knee. Keep your upper body erect. Your hands remain behind your head with fingers interlaced.
- Return to the start position and make sure that your shoulder blades touch the ground.
- As you raise your body the second time, alternate by raising and twisting your body bending at the waist until your right elbow touches your left knee.
- Return to the start position. Alternate twisting your body left and right on subsequent repetitions.

Modified V-Sit

- Lie flat on the ground with your arms extended to your side and your legs bent at a 45 degree angle.
- Contract your abdominal, raising your shoulders up off the floor. Keep your head in line with your spine - do not tuck your chin in to your chest. Move your shoulders and head up as one unit keeping your arms extended.
- As you raise your upper body, bring your knees to your chest. Your lower back should remain in contact with the ground throughout the exercise.
- Hold for 1 second and return to the start position slowly. Repeat.

Cradle Crunch

- Lie on your back with your knees bent, feet lifted off the floor, and ankles crossed.
- Contract the abdominal muscles, allowing the head and shoulders to raise slightly. *Do not* lift the head and shoulder first - concentrate on contracting the abdominal muscles and the head and shoulders will naturally follow.
- Hold the contraction while pulling the knees in toward the chest. You should feel this in the upper and lower abdominal regions.
- Release the contraction and repeat.

Crunch Sit-Up

- Lie face up on the floor with both knees bent and your feet flat on the floor. Place your hands behind your head.

- Contract your abdominal, raising your shoulders up off the floor. Keep your head in line with your spine - do not tuck your chin in to your chest. Move your shoulders and head up as one unit.
- Hold for 1-2 seconds and slowly return to the starting position.
- Your lower back should remain in contact with the ground throughout the exercise.

Plate Crunch

- Lie on your back on the floor with your knees bent and your feet flat on the floor.
- Place a weight plate or dumbbell on your chest and hold it by crossing your arms over it.
- Contract your abdominal and lift your torso, keeping the chin up. Use the abdominal to lift the weight on your upper body.
- Curl up and down slowly, concentrating on the contraction of the abdominal muscles.

Reverse Crunch

- Lie on your back with your knees bent, feet lifted off the floor, and ankles together.
- Extend your arms outward approximately shoulder height for support.
- Keeping your ankles together bring your knees to your chest. Hold for 1 second.
- Return to the start position slowly. Repeat.

Swiss Ball Crunch

- Lie flat balancing your upper body on a Swiss ball. Your knees are bent and feet flat on the floor. Your hands are behind your head with fingers interlaced.
- Contract the abdominal muscles, allowing the head and shoulders to raise slightly. *Do not* lift the head and shoulder first - concentrate on contracting the abdominal muscles and the head and shoulders will naturally follow.
- Hold the contraction for 1 second. You should feel this in the upper and lower abdominal regions.
- Release the contraction and repeat.

Bench Crunch with a Twist

- Lie on the floor with the lower part of your legs propped on a step or chair. Relax your legs.
- Place one thumb behind each ear so that your fingertips touch behind your head but aren't clasped.
- Lift your head, neck and shoulders off the floor in one motion, exhaling as you lift.
- With your shoulder blades off the floor, rotate your torso to the left, leading with your right shoulder.
- Rotate back to the center, then to the right (leading with your left shoulder), then back to center and return to starting position.
- As you lift and twist, contract your abdominal.
- *Strengthens rectus abdomens and oblique.*

Leg and Knee Raise - Flat

- Sit on the end of a flat bench and support your body weight on your hands resting just behind you. Lean back slightly and straighten your legs out in front of you.
- Bend your knees as you raise them towards your chest as far as possible.
- Return to the starting position.
- Perform the exercise slowly.

Leg and Knee Raise - Incline

- Lie with your head at the top of an inclined sit up board.
- Reach overhead with both hands and hold the board for support.
- Bend and pull your knees slowly towards your chest, keeping your knees together.
- Return to the starting position.

Leg and Knee Raise - Hanging

- Hang from a chinning bar with a palm down grip about shoulder width apart.
- Bend the right knee as you raise the knee towards your right shoulder. Continue until your thigh is parallel to the floor.
- Pause for one second and then lower your leg to the starting position.
- Repeat with the left knee towards the left shoulder.
- You can also perform this exercise by bending both knees and keeping them together as you raise them towards your chest until both thighs are parallel to the floor.

Knee Raise - Lying and Twisting

- Lie face up on the floor with your legs straight and your hands behind your head.
- Bend your right knee and raise your knee towards your left elbow, which you simultaneously move towards your right knee. The movement should twist the upper body to the right and the lower body to the left.
- Return to the starting position and repeat with the opposite extremities, alternating one side and then the other.

Knee-up – Decline

- Lie with your head at the top of an declined sit up board.
- Reach overhead with both hands and hold the board for support.
- Bend and pull your knees slowly towards your chest, keeping your knees together.
- Return to the starting position.

V-up Toe Touch

- Lie on the floor with your arms extended fully behind your head and your legs straight.
- Bend at the waist while raising your legs and arms straight up.
- Continue until your arms and legs touch each other above your abdomen.
- Return to the start position.
- *This is an advanced exercise.*

Knee Raise – Ground or Flat Bench

- Sit on the floor or the end of a bench. Place your hands flat on the floor near your hips or grasp the end of the bench. Lean back slightly and extend your legs out in front of you, keeping your feet and knees together and bending your knees at a 45 degree angle.
- Contract your abdomen, and fully extend your legs pushing your feet forward. Hold for 1 second.
- Return your legs to the start position and repeat.

Body Twist

- Lie on your back on the floor with your arms extended outward to your sides at shoulder height. Your legs should be bent at a 90 degree angle with feet pointing upward.
- Keeping your upper body still, bend at the waist and twist lowering your legs to one side and keeping them 6 inches off the ground. Hold for 1 second.
- Return to the start position keeping your knees and feet together.
- Bend at the waist and twist lowering your legs to the opposite side and keeping them 6 inches off the ground. Hold for 1 second.
- Return to the start position and repeat.

Side - Jack Knife

- Lie on the floor on your side with one arm extended fully behind your head and the other supporting your weight with elbow bent, keeping your legs straight.
- Bend at the waist while raising your legs extended.
- Continue upward as far as you can go.
- Return to the starting position.
- *This is an advanced exercise.*

Side Raise on Bench

- Lie on your side with your arm closest to the ground supporting you, elbow bent at a 90 degree angle and the other arm bent with your hand behind your head. Extend your legs outward keeping your knees and feet together and 6 inches off the ground.
- Contract your abdomen and attempt to raise your legs upward as far as you can. Hold for 1 second.
- Return to the start position and repeat.

Flutter Kicks

- Lie flat on the ground with your legs extended outward, feet and knees together and feet 6 inches off the ground.
- Place your hands under your buttocks with your palms facing down.
- Keeping your legs straight with knees slightly bent, alternate raising one leg to a 45 degree angle and then the other. Your feet should always be slightly off the floor and never touch the ground.
- You can keep your head flat on the ground or raised.

Hello Dollies

- Lie flat on the ground with your legs extended outward, feet and knees together and feet 6 inches off the ground.
- Place your hands under your buttocks with your palms facing down.
- Keeping your legs straight with knees slightly bent open your legs to form a V keeping them 6 inches off the ground. Hold for 1 second.
- Return to the start position and repeat.

Throw A Way's

- You will need a partner or a post for this exercise.
- Lie flat on the ground with your arms reaching back and holding the ankles of your partner or post behind you. Bend at the waist extending your legs to a 90 degree angle.
- Your partner will throw your legs forward, left or right to the ground.
- Contract your abdomen and keep your feet from touching the ground immediately returning them to the start position.
- If you do not have a partner you will lower your legs on your own and immediately return them to the start position.
- Keep your upper body still, all movement should be below the waist.

Cycling Twist

- Lie flat on the ground with your legs fully extended to the front 6 inches off the ground and your upper body raised at a 30 degree angle off the ground. Your hands are joined together at the waist.
- On alternating movements you will turn your body to one side while bringing the opposite side knee toward your chest.
- Without allowing your feet to touch the ground, twist your body alternating to the other side. Your legs will alternate with your body twist in a similar movement to cycling.
- Your hands remain joined the entire time.

Standing Trunk Bend

- Stand with your feet slightly wider than shoulder width, and your palms resting at your sides.
- Grasp a dumbbell in each hand (this exercise can also be performed with no weights) keeping your arms resting straight down at your sides.
- Bend your trunk to the right as far as possible, keeping your body facing forward and both feet in contact with the floor.
- Return to the starting position and repeat with the left side.

CARDIOVASCULAR ENDURANCE

How to Start a Running Program

Assuming that you have all completed your physicals and are ready to begin, there are a few things to be aware of before you take your first steps. You have to have the right equipment or gear, you have to know about warming up and cooling down, and you have to an open mind about what you are going to do.

Gear includes two major items: clothing and shoes. In the Army, Uncle Sam makes the clothing part easy by issuing us the Army PT uniform. There are a lot of high-quality functional goods on the market today. Fit and comfort are the most critical in apparel and shoes for pleasurable and productive running. There are volumes that could be written on this subject and everybody has their own opinion. For now, make sure that you have given some thought to your gear and that you have a pair of supportive and durable training shoes with which to start running.

The warm-up and cool-down will continue to increase in importance as your pace and mileage increase. A warm-up can help trigger the body's systems for exercise and conversely, a cool-down at the end of the session will properly return the body to its resting state. The warm-up is usually done in two ways: with stretching exercises and a short period of jogging. Approach stretching just as you approach running, with care and caution. There has been a great deal written about stretching but a good rule of thumb is "Less is Better". Select three or four simple stretching exercises (SEE Flexibility) that you feel comfortable with and do them before and after running. You can always add more if you need to. The most important part of the body to un-tighten is probably the backs of the legs, the calves and hamstring muscles. Make sure you select a stretching exercise that will help relax these muscles.

Keeping an open mind is important because the actual experience may feel different from what you expect. You may get more or less from it than you anticipate. You may find you are good at it or that it is a real chore. You may feel awkward doing it, or even embarrassed. You will probably get a lot of conflicting advice from your running friends. Proceed with the idea that you are your own personal expert and that you will judge the merits of running based on what it feels like to you. Don't go in with unrealistic expectations. The benefits of running do not take effect over night or even in the course of a few days or a week.

The First Day

On your first day, try fifteen minutes of movement. I say movement because it is acceptable to walk as well as run. However, don't let yourself walk more than you run in those first fifteen minutes, and of course try to run for the whole time. Soon you won't need to walk. If you run the whole time you probably covered one to one-and-a-half miles. Don't be any more ambitious the first day. Look for a flat running route and try to avoid hills in the beginning. I would recommend an ordinary road instead of a track. Tracks have their advantages but will limit your initial enjoyment.

Don't worry about form. Just run in as natural a way as possible. As long as your body is fairly erect (with a bit of forward lean), your head up and not tilted, your arms about waist high and moving more in a front and back motion rather than side to side motion. These are not rules, just things to be aware of. You will develop your own style of running. If you feel great the first day, you're an exception. Most beginners will feel a little strained and sluggish and may complain of leg muscle stiffness. It's normal. However, no matter how out of sorts you may feel physically, you'll feel pretty good emotionally knowing that you have accomplished something. You have run for fifteen minutes and you are ready to try it again.

Your First Month of Running

I have developed a running schedule for your first month. (SEE Form 2-1) In this schedule, I use time running instead of mileage. It is meant as a guide. It may be too ambitious for some and not enough for others. It is designed to let you reach a level of cardiovascular fitness that will have you running for thirty minutes by the end of a month.

It is critical, in the first month that you try for consistency. You can only get training benefit if exercise is done on a regular basis and even then, it takes time. For your emotional well-being, you will feel better about your running program if you adhere to it (even if results come slow). Remember that we discussed the hard/easy concept. You may begin by running every other day. Eventually, you will run every day. Even when you run every day, if one day is hard the next should be easy. You may want to bike or swim on the off day to break up the routine. I try to run hard three days a week and easy the other days.

You will experience a great deal of change with your body, emotions and lifestyle. This is all normal. If for any reason, by the end of a month, you are unable to run comfortably for thirty minutes without stopping, it does not mean you have failed. We all react differently to running, especially in the beginning. Take as long as you need to reach your thirty-minute goal. When you reach thirty minutes feel good about yourself, you can run three miles.

There is an addictive quality to running. Take note of your goals and evaluate how much you enjoy running and how it fits in with your lifestyle. As an Army ROTC cadet, soldier or officer you may want to improve your speed so that you can do your best on the two-mile run. If this is your goal, I would recommend adding one day a week to speed work (also referred to as intervals and track work). These types of training sessions have helped countless individuals in attaining faster times running. However, before anyone graduates to this type of training, they should have a solid base of 6-8 weeks of long slow distance runs. The workouts I have listed are broken down to beginning and intermediate intervals and advanced intervals. They are what I use after I have built up a base of 40-50 miles per week for about 8 weeks.

Beginning/Intermediate Intervals

Begin with a nice easy warm-up of about 1 to ½ miles and lots of stretching before you start your intervals. Early in the season, the first speed workouts I do are one mile repeats. In other words, a couple of one mile runs at 1 to ½ minutes faster than training pace. Let me give you an example: if your training pace is 9 minutes per mile, you should shoot for 7 ½ to 8 minute miles on the track. Follow each one with a lap or two to recover in between and then an easy 1 to 2 mile cool-down at the end. Total distance will be 5 to 6 miles. I do this once a week for the first 3-4 weeks in the early spring. What is important here is consistency of your splits. For example, if you are running a 7 minute mile, you should be doing 1:45 quarters. Try not to vary more than 3-4 seconds either way on each quarter. Don't run the first two laps all out and then have to struggle to finish the last two laps.

During these first 3-4 weeks, you should try to get progressively faster on your mile times. If you do 2 X 7 minute miles the first week, try 2 X 6:45 the second week, 2 X 6:30 the third week, etc. After 3-4 weeks, you will be ready to start doing shorter but faster distances. Do your usual warm-up and start off with a mile repeat, and then 2 X 880. Now these half miles should be slightly faster than your half-mile split for the mile. For example, if you run a 6:30 mile to open (1:37 splits), your half-mile split will be 3:15. So your two 880's should be around 3:10. After 2-3 weeks of these, you are ready to get even shorter and faster.

After your warm-up, open with a couple of 880's and then try some quarter miles (2-4 depending on how you feel). Remember, whatever your quarter mile splits are for the half miles, you should go slightly faster on the quarter miles themselves. By now, you should be able to see the pattern emerging. After spending two or three weeks at each of these levels, you then move to shorter distances but run them progressively faster. Eventually you can even get down to 220's.

When you have reached a level where you feel comfortable in being able to run consistent splits regardless of the distance, you can then attempt to reduce your recovery time in between intervals. In other words, where you might initially jog 880 in between your mile repeats, you will want to reduce that to a 440 jog

in between your half mile intervals. You can further reduce it if you wish to a 220 jog in between your quarter mile intervals if you feel up to it. A key point to know and remember is “Listen To Your Body”.

This is a fairly ambitious program (especially the last 4-6 weeks). If you feel you can’t progress beyond a certain level, then just stay at that level while trying to maintain or improve your times. Intervals are hard work and you won’t always look forward to them. But if you have a training partner and you just keep your goals in mind, you should be able to sufficiently motivate yourself to get out and just do it! Remember, if you want to run fast during your 2 mile run time, you have to run fast in training.

WEEK 1

Warm-up
2 X 1 Mile
jog 88 after each
Cool-down

WEEK 2

Warm-up
2 X 1 Mile
jog 880 after each
Cool-down

WEEK 3

Warm-up
2 X 1 Mile
jog 880 after each
Cool-down

WEEK 4

Warm-up
2 X 1 Mile
jog 880 after each
Cool-down

WEEK 5

Warm-up
1 X 1 Mile
2 X 880
jog 440 after each
Cool-down

WEEK 6

Warm-up
1 X 1 Mile
2 X 880
jog 440 after each
Cool-down

WEEK 7

Warm-up
1 X 1 Mile
2 X 800
jog 440 after each
Cool-down

WEEK 8

Warm-up
1 X 1 Mile
2 X 880
jog 440 after each
Cool-down

WEEK 9

Warm-up
1 X 880
6 X 440
jog 440 after each
Cool-down

WEEK 10

Warm-up
8 X 440
jog after each
Cool-down

WEEK 11

Warm-up
4 X 440
4 X 220
jog 220 after each
Cool-down

WEEK 12

Warm-up
4 X 440
6 X 220
jog 220 after each
Cool-down

Advanced Intervals

If you are looking for more interval workouts or some different variations, I have listed a few more below you may want to consider. Again, you should have a good base before doing any speed workout. These should help you increase your 2 mile run time as well as any distance from 5K up to and including the marathon

however, primarily the middle distance races. As always, be sure you have done a good warm up (1-1/2 to 2-1/2 miles) and stretched well to avoid the risk of injury.

You can start off at any distance such as the 880, but the 440 is more common. You start off with 3 reps and then decrease the distance and correspondingly, the interval. It follows the same simple principal of “shorter but faster”.

WEEK 1	WEEK 2	WEEK 3
WARM-UP	WARM-UP	WARM-UP
<u>3 X 440 @ 90</u>	<u>4 X 440 @ 85</u>	<u>5 X 440 @ 80</u>
<u>3 X 330 @ 66</u>	<u>4 X 330 @ 63</u>	5 X 330 @ 60
3 X 220 @ 43	4 X 220 @ 42	5 X 220 @ 38
JOG 220 AFTER EACH	JOG 220 AFTER EACH	JOG 220 AFTER EACH
COOL-DOWN	COOL-DOWN	COOL-DOWN

Another speed workout is the “ladder”, where you go from shorter to longer distances, or the opposite variation, from longer to shorter:

WARM-UP	WARM-UP
440	1 MILE
880	1320
1320	880
1 MILE	440
1320	880
881	1320
440	1 MILE
JOG 440 AFTER EACH	JOG 440 AFTER EACH
COOL-DOWN	COOL-DOWN

These are fairly rigorous workouts. The first one includes 4 miles of actual speed work with 1-3/4 miles jogging in between for almost 6 miles. The second one is comprised of 4-3/4 miles of actual speed work for a total of 6-1/2 miles on the track. But you can see that you are limited only by your imagination in the types and degree of difficulty of the speed workouts you do.

Everyone gets bored with intervals eventually, even if only temporarily. When that happens, there are alternative options. One of the more common is called “Fartlek”. On one of your usual runs, you basically pick up the pace for a certain time or distance at various points along your course. One method is to use landmarks such as telephone or light poles, city blocks, etc., and run hard from point to point. The other is to simply use your watch and to alternate running hard for two or three minutes, then easy for two or three minutes. You can do that for as many sets as you feel up to.

Another option for building speed as well as strength is to do hill work. Find a good, long hill that will take you 1-1/2 to 3 minutes to climb at full effort. Depending on the geography and safety involved, you can go down the back side, turn around, and climb back up and over to where you started for one complete circuit. Or you can just turn around at the top and go back down, then repeat. Start off with 4-5 hills the first week until you work up to 8-10 hills in a workout.

You may want to consider some aerobic cross training that is entirely different. Some possibilities may include swimming laps for 30 minutes or more, riding a bike for an hour, possibly even a workout on a Stairmaster or Nordic Track. You will get a chance to use some new muscle groups that perhaps you haven’t used in a while and you will get a refreshing, yet productive break from running. Variety in any workout program is essential to keep from getting bored and losing interest.

How to Develop a Cycling Program

Cycling is a lot of fun but it can also be expensive. In addition to the need for more equipment, injuries may occur due to collisions. It is important to have a basic understanding of the rules of the road and ride defensively. The wear of safety equipment at all times is a must. Cycling primarily conditions the lower body if done strenuously. Supplemented with a good upper body strength program and total body stretching it makes for an excellent way to improve your cardiovascular endurance.

The key to a good cycling program is how long you ride (Duration) and how fast you ride (Intensity). This will differ for a beginner versus an intermediate or advanced rider. Riding for a certain period of time is easy. Determining your intensity is harder. One way is to exercise at your target heart rate. You can determine your heart rate during the exercise period by taking your pulse and counting your heart beats per minute (bpm). You

can take this for 10 seconds and multiply the number by six. Remember this does not have to be exact, it just has to tell you if you have the right intensity. Use the chart below, Work Form 1-2 to help you determine your exercise target heart rate.

EXERCISE PULSE RATE RANGES

	FITNESS		PERFORMANCE
	Aerobic Range		High Intensity Activity
AGE	Level 1	Level 2	Level 3
20	140-160	160-170	170>
25	137-156	156-166	166>
30	133-152	152-162	162>
35	130-148	148-157	157>
40	126-144	144-153	153>
45	123-140	140-149	149>
50	119-136	136-145	145>
55	116-132	132-140	140>
60	112-128	128-136	136>

Work Form 1-2

To ensure safe and effective aerobic exercise the chart (Work Form 1-2) has three levels of activity, which vary according to age, and personal goals for fitness or performance. When beginning your aerobic program abide by recommended heart rate ranges. If they are too easy or too hard, feel free to change the level being challenged. When in doubt, err on the side of caution and remember to listen to your body. Now let's get into designing your cycling program.

Beginner: Attempt to use bike pathways whenever possible or find a comfortable loop with different changes of scenery. Try to bike on flat surfaces avoiding hills to start. Speed up or slow down to keep your exercise heart rate within the recommended HR level. Use the information found in Work Form 1-3 to structure your program. Remember that level 1 is a beginner, level 2 is an intermediate and level 3 is for an advanced program.

Intermediate/Advanced: Build up gradually from 30 to 60 minutes of continuous cycling at a fast pace. Do high-intensity activities such as speed work (i.e., intervals) or resistance work (i.e., climbing hills). There are several references on the market that **you can consult for more improvement strategies.**

WEEKS	TIME (min.)	PULSE RATE	EXERCISE PER WEEK	FREQUENCY	INSTRUCTIONS
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BEGINNER PROGRAM

1-4	25	Level 1	3	Moderate pace
4-8	25	Level 1	3-4	Moderate - Brisk pace
8-12	30	Level 1-2	4	Brisk pace

INTERMEDIATE PROGRAM

12+	30-40	Level 2-3	4	Brisk pace
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ADVANCED PROGRAM

Each wk. 45-60	Level 3	4	Fast pace
Each wk. 15-30	Level 3	1-2	High Intensity Activity

Work Form 1-3

For variation to your cycling program you can follow the same general program as provided below using a stationary or indoor bike. Adjust the tension control to maintain your recommended heart rate level.

Other Aerobic Programs

The principals that have been covered in developing a running or cycling program are similar for several other aerobic (cardiovascular endurance) forms of exercise. These include but are not limited to aerobic dance/movement, cross country skiing (in and outdoors), walking, jogging/running, rowing (indoors), skating/in-line skating, rope jumping, stair machines, swimming, treadmill, and water exercises.

